RAILROAD GAZETTE

FRIDAY, APRIL 1.

NEWS OF THE WEEK.

We give below, in a condensed form, the leading news items of the week. These items will be found in detail in their appropriate columns.

Meetings Next Week.—Catawissa, in Philadelphia; Chicago & Alton, in Chicago; Colorado Midland, at Colorado Springs, Col.; Joliet & Chicago, in Chicago.

Elections.—Mexican National, W. G. Raoul, President.—Ohio & Northwestern, H. C. Parsons, President.—St. Louis, Vandalia & Terre Haute, S. B. Liggett, Secretary.—St. Johnsbury & Lake Champlain, T. W. Morse, Secretary.—Tuscaloosa Northern, H. H. Peck, President.

Personal.—Died: William S. Bartlett and James M. Oakley.

Traffic.—Anthracite coal shipments for week ending March 26 show increase of 4.8 per cent. as compared with corresponding period last year; bituminous shipments show increase of 155.7 per cent; coke, for week ending March 19, shows increase of 13.4 per cent. Cotton receipts, interior markets, show increase of 8.9 per cent. as compared with corresponding period last year; shipments show decrease of 7.8 per cent.; seaport receipts show decrease of 28.0 per cent.; exports show increase of 77.9 per cent. Cotton in sight is less than at same date last year by 39.6 per cent.

Earnings.—For the month of February, 9 roads report gross earnings, 8 showing an increase and 1 a decrease.

Changes and Extensions.—*Alabama:* Sheffield & Seaboard institutes survey.—*Arizona:* Mineral Belt is completed for 8 miles.—*Colorado:* Colorado Midland is finished to Florissant.—*Illinois:* Lake Erie & Western begins extension from Bloomington to Peoria.—*Indiana:* Cincinnati, Wabash & Michigan Southern will now survey from Anderson to Rushville.—*Iowa:* Chicago, St. Paul & Kansas City begins work.—*Maryland:* Drum Point will build from Baltimore to Drum Point.—*Mexico:* A new road is to be built from San Benito to Tapo Chula.—*Missouri:* St. Louis, Kansas City & Colorado completes survey from Sedalia to Lexington.—*Mississippi:* Macon & Tuscaloosa institutes survey.—*Nebraska:* Chicago & Northwestern will build from Fremont southwestward.—*Pennsylvania:* Lehigh Coal & Navigation Co. begin the branch from Scranton to Minooka.—*Wyoming:* Union Pacific is to build from Laramie, southward.

New Companies Organized.—Birmingham, Ironville & Oxmoor files articles in Alabama.—Chattanooga Valley files articles in Alabama.—Cherokee Construction Co. incorporated in Illinois.—Chicago, Grand Tower & Texas files articles in Illinois.—Colorado & Wyoming incorporated in Colorado.—Elko & Idaho files articles in Nevada.—Idaho, Nevada & Montana files articles in Nevada.—Little Rock & Texas files articles in Arkansas.—Memphis, Arkansas & Texas files articles in Arkansas.—Missouri, Kansas & Nebraska is organized in Kansas.—Moorhead, Leech Lake, Duluth & Northern incorporated in Minnesota.—Newport, Jonesborough & St. Louis incorporated in Arkansas.—Omaha & Gulf, obtains charter in Kansas.—St. Louis, Grand Tower & Southern files articles of incorporation in Illinois.—Salina, Pacific & Lincoln files charter in Kansas.—Shawnee & Muskingum incorporated in Ohio.—Toledo, Peoria & Western incorporated in Illinois.—Tuscaloosa Northern is organized in Alabama.

Leases and Sales.—Dayton & Delphos is sold.—Boston & Lowell leases the Connecticut & Passumpsic rivers road.—Indiana, Bloomington & Western is sold.—Iowa Falls & Sioux City will be sold to the Illinois Central.—Memphis & Little Rock will be sold under foreclosure on April 13.

Reports and Financial.—Chicago, Burlington & Quincy for the year ending Dec. 31 shows an increase of 0.6. per cent. gross and 0.7. per cent. net.—Missouri Pacific for the year ending Dec. 31, 1886, shows increase of 5.6. per cent. gross and 2.7 per cent. net.

Train Accidents in February.

The following accidents are included in our record for the month of February:

COLLISIONS.

REAR.

2d, freight on Missouri Pacific broke in two near Whitewright, Tex., and rear section ran into forward one, wrecking 6 cars.

4th, night, oil train on Philadelphia & Reading broke in two at East Mahanoy Junction, Pa. The rear portion ran into the forward one, causing an explosion which ignited the oil and burnt up the cars.

5th, a. m., freight on Chicago & Atlantic ran into rear of preceding freight at West Point, Ind., wrecking an engine and several loaded cars, all of which were burnt up. Cause, misunderstanding of orders.

8th, p. m., freight on New York & Greenwood Lake ran into rear of passenger train standing at Midvale, N. J. One trainman injured. There was a dense fog at the time. The passenger train had had a flag out, but had just called it in and was about to start.

10th, night, passenger train on Brooklyn Bridge Cable Road ran into rear of preceding passenger train at the Brooklyn terminus, which had taken in its red tail light before clearing the main track.

10th, night, freight on Missouri Pacific ran over a misplaced switch and into some empty cars in St. Louis, Mo., wrecking 3 of the cars and injuring the fireman.

10th, night, freight on Bradford, Bordell & Kinzua became unmanageable while descending the steep grade near Bradford, Pa., and ran at a high speed into the New York, Lake Erie & Western yard, where it struck a freight train, making a bad wreck.

11th, passenger train on Chicago & Alton ran into a freight car which had blown out upon the main track from a siding at Plainview, Ill., doing some damage.

11th, a. m., passenger train on East Tennessee, Virginia & Georgia ran into rear of a freight train standing on the main track at Rome, Ga., wrecking the caboose and damaging the baggage-car in the passenger train considerably. Three trainmen injured.

12th, night, freight on Pennsylvania ran into rear of preceding freight at Coatesville, Pa. One trainman and one tramp hurt.

13th, switching engine on Missouri Pacific ran into and wrecked 3 cars in the yard at Kansas City, Mo.

14th, a. m., freight on Richmond, Fredericksburg & Potomac backed into a car on a side-track in Richmond, Va., wrecking the car and damaging an adjoining building.

14th, night, freight on Indianapolis & St. Louis ran into rear of passenger train which had stopped near Robinson Creek, Ill. A flagman was sent back, but the freight was too quick for him.

15th, very early, passenger train on Chicago & Iowa ran into rear of preceding passenger train near Waterman, Ill., wrecking 2 sleeping cars. Engineer hurt by jumping.

15th, a. m., freight on Wabash, St. Louis & Pacific ran into rear of preceding freight at Sangamon, Ill., wrecking engine and 20 cars and damaging the station building adjoining. There was a dense fog at the time.

17th, passenger train on Boston & Maine ran into a car which had been left standing on the main track in Lawrence, Mass., hurting 2 men and a boy on the car. The signalman gave a clear signal to the engineer when he should not have done so.

18th, very early, passenger train on Baltimore & Ohio ran into a misplaced switch, and into freight near Hyndman, Pa. Engineer badly hurt.

19th, very early, east-bound freight on Pennsylvania railroad ran into some cars which had broken away from a preceding freight near Collins station, Pa., wrecking several cars and blocking the opposite main track.

19th, night, passenger train on Northern Pacific ran into the rear of a freight on a side-track near Tower City, Dak., throwing the caboose and two passenger engines down a bank, and injuring both enginemen and both firemen.

23d, a. m., freight on Central Vermont ran into rear of preceding freight at Essex Junction, Vt., damaging several cars.

23d, a. m., freight on Chicago, Burlington & Quincy ran into caboose standing on the main track near Red Oak, Ia., badly wrecking a large number of cars, killing a brakeman and injuring another and a drover.

23d, night, freight on Housatonic road ran into a milk car which some miscreant had run on to the main track at Great Barrington, Mass.

26th, freight on Chicago, Rock Island & Pacific ran into a pile driver on a bridge near Seymour, Ia., and 16 loaded stock cars went through the bridge. Engineer killed and fireman dangerously injured.

28th, freight on Lake Shore & Michigan Southern ran into rear of preceding freight at the siding in Rolling Prairie, Ind., wrecking 5 cars.

BUTTING.

Early in the month, butting collision between two freights on Canadian Pacific, Western division, near Schreiber. The trains met on a trestle 80 ft. high and 300 ft. long, 2 cars only being tipped off. Two trainmen hurt.

1st, butting collision between two freights on Cleveland, Columbus, Cincinnati & Indianapolis near Bellefontaine, O., wrecking both engines and 8 cars.

1st, butting collision between two freights on Chicago & Northwestern at Dixon, Ill.

2d, butting collision between two freights on Baltimore & Ohio in Newark, O. Engines and several cars wrecked; 1 brakeman severely hurt.

2d, p. m., butting collision between two freights on Michigan Central, near Francisco, Mich., wrecking both engines, several cars, and blocking the track 8 hours.

4th, night, butting collision between passenger and light engine on Union Pacific at Echo, Utah. One engineman killed.

5th, butting collision between a passenger and a freight train on Burlington and Missouri River, near Hastings, Neb., damaged both engines.

7th, butting collision between two freights on Michigan Central, near Monroe, Mich., wrecked both engines and injured one engineer. There was a heavy fog at the time.

8th, very early, butting collision between two freights on East Tennessee, Virginia & Georgia, at Dubois, Ga., piling up the engines and several cars in a bad wreck. One trainman and 1 tramp killed; 2 trainmen hurt.

8th, p. m., butting collision on Pittsburgh, Cincinnati & St. Louis, between light engine and freight in Pittsburgh, Pa.

9th, midnight, butting collision between two passenger trains on Baltimore & Ohio, at Knowles Station, Md. Both engines wrecked. Engineer of one jumped and was seriously injured.

10th, passenger train on Savannah, Florida & Western ran into a freight which was backing out of a siding on to the main track in Thomasville, Ga., and wrecked engine and several cars.

10th, p. m., butting collision between two freights on Grand Rapids & Indiana at Big Rapids, Mich. Both engines and several cars wrecked. Cause, misplaced switch.

12th, a. m., freight on Utah Northern ran into snowplow near Monida, Mont., injuring the conductor.

12th, night, butting collision between two switching trains on Grand Trunk in Port Huron, Mich. A brakeman jumped upon one of the trains to try to stop it, but failed and was instantly killed in the collision.

13th, butting collision between two freights on Baltimore & Ohio near Vancievesville, W. Va. Two trainmen injured.

14th, butting collision between two freights on Pennsylvania Railroad at Painter, Pa., wrecked both engines and 9 cars.

15th, butting collision between a wild engine and a freight on Illinois Central at Pana, Ill., completely wrecked both engines.

15th, very early, butting collision between two freights on Pennsylvania Railroad near Palmyra, N. J., wrecked 12 cars.

15th, p. m., butting collision between two switching engines on Atlanta & West Point, in Atlanta, Ga.

17th, a. m., butting collision on Detroit, Lansing & Northern between freight and light engine near Ionia, Mich. One engineer's watch was 5 minutes slow.

18th, a. m., butting collision between a passenger and a freight train on Central Vermont, near Northfield, Vt., badly wrecking both engines and 2 cars. Two trainmen hurt. The freight was running on the passenger train's time.

20th, butting collision between two freights on Milwaukee & Northern at Depere, Wis.

21st, evening, butting collision between two freights on New York, Lake Erie & Western near Allendale, N. J., wrecked both engines and several cars. The report says that there must have been a misunderstanding of orders.

22d, night, butting collision between coal and freight trains on Philadelphia & Reading at Tamarand, Pa., damaging engines and several cars. Cause, mistake in orders.

23d, early, butting collision between a passenger and a freight train on Chicago, Burlington & Northern near La Crosse, Wis., damaged engines and several cars. The freight failed to sidetrack in time.

23d, night, butting collision between two freights on Chicago & Iowa near Shabbona, Ill., wrecked both engines and 3 loaded stock cars.

26th, two freights on Chicago & Alton collided near Kansas City, Mo., wrecking engines and 5 cars.

26th, a. m., butting collision between two freights on Michigan Central in Three Rivers, Mich., completely wrecked one engine and 10 cars.

27th, p. m., butting collision between an East Tennessee, Virginia & Georgia and a Georgia Pacific passenger train on the joint track near Atlanta, Ga. The Georgia Pacific train was backing into a side track, but did not complete the operation soon enough.

28th, butting collision between a passenger and a freight train on Baltimore & Ohio near Grafton, W. Va. Both engines were badly damaged, a fireman killed and 2 tramps seriously injured.

CROSSING.

10th, freight on Little Miami road into Ohio Southern freight at the crossing in South Charleston, O., derailing engine and several cars.

11th, night, light engine on Pittsburgh, Ft. Wayne & Chicago ran into Illinois Central engine at the crossing of the two roads in Chicago.

DERAILMENTS.

BROKEN RAIL.

1st, passenger train on Northern Pacific derailed by broken rail near Stillwater, Mont. Four cars went over an embankment and down to the edge of the Yellowstone River. Serious fire was prevented by the use of hand grenades and snow.

4th, a. m., 10 cars of coal train on Lehigh & Hudson River derailed at Monroe, N. J., by broken rail.

5th, 2 a. m., passenger train on Central Vermont struck a broken rail just before reaching the high bridge over the White River, 4 miles north of White River Junction, Vt. The rear car was derailed and ran on the sleepers until it reached the bridge, which was a deck bridge, 45 ft. high, where it tipped off at one side and pulled 3 other cars with it. The engine and 2 forward cars remained on the track. The cars that went down immediately took fire, and in a few minutes were consumed, together with the wooden bridge. Thirty people were fatally crushed or burned to death, and 37 were injured, the survivors suffering greatly from the severely cold weather.

5th, a. m., freight on Wabash, St. Louis & Pacific derailed by broken rail near Ft. Wayne, Ind., wrecking 21 cars.

11th, a. m., freight on Texas & Pacific derailed by broken rail near Colorado, Tex.

14th, passenger train on Southern Kansas struck a broken rail near Longton, Kan., derailed baggage and express cars, overturned 2 coaches and a sleeper and slightly injured several passengers.

19th, freight on Wisconsin Central derailed by broken rail near Neenah, Wis.

19th, a. m., freight on Wisconsin Central struck a broken rail near Medina, Wis., wrecking 18 cars.

22d, freight on Chicago, St. Paul, Minneapolis & Omaha derailed by broken rail near Bloomer, Wis., injuring 2 trainmen and 2 passengers.

SPREAD RAILS.

8th, p. m., engine of passenger train on New York Central & Hudson River derailed by the spreading of the rails in Rochester, N. Y.

12th, night, passenger train on Indiana, Alabama & Texas derailed by spreading of the rails near Merritts, Ky. One trainman and 1 passenger hurt.

BROKEN BRIDGE.

2d, a. m., freight on Virginia Midland went through a trestle bridge into Bannister River near Danville, Va. The wreck caught fire from slacked lime and was entirely consumed. One trainman killed.

11th, very early, passenger train on Cleveland & Pittsburgh ran upon a bridge near Cleveland, O., which had been weakened by a freshet. The engine and 2 cars went over in safety, but were derailed after crossing by the sudden settling of the bridge under the smoking car next behind them. Baggagemaster and fireman were slightly hurt.

18th, p. m., freight on Chicago, Santa Fe & California went through a trestle bridge at Mud Lake, Ill., killing fireman and injuring engineer.

27th, p. m., freight train on Atlantic & Pacific broke through a bridge near The Needles, Cal., wrecking engine and 3 cars, which caught fire and were destroyed. Engineer, brakeman and 3 tramps were burned to death; 2 trainmen severely and 2 passengers slightly injured.

DEFECTIVE SWITCH.

4th, very early, freight on New York City & Northern jumped the track at a defective switch near High Bridge, N. Y., blocking tracks several hours.

11th, very early, passenger train on Atchison, Topeka & Santa Fe derailed by defective switch in Lawrence, Kan. Engineer and fireman injured.

DEFECTIVE FROG.

18th, a. m., passenger train on Boston & Maine derailed by a defective frog at Conway Junction, N. H.

BROKEN WHEEL.

8th, a. m., freight on New York & New England derailed by broken wheel at Middleville, Mass.

11th, night, freight on New York, Lake Erie & Western derailed near Middletown, N. Y., by a broken wheel.

11th, night, freight on New York, Lake Erie & Western derailed by broken wheel near Otisville, N. Y.

12th, night, refrigerator car in passenger train on New York, Lake Erie & Western derailed by broken wheel at Owego, N. Y.

BROKEN AXLE.

10th, p. m., freight on Buffalo, New York & Philadelphia derailed near Corry, Pa., by a broken tender journal, piling up 20 cars of oil and merchandise in a bad wreck, which took fire and was burnt up.

15th, a. m., freight on Pennsylvania railroad derailed by broken axle near Auburn, Pa.

16th, very early, freight on New York Central & Hudson River derailed at Clyde, N. Y., by broken axle, badly wrecking 14 cars.

24th, p. m., freight train on Northeastern derailed by broken axle when crossing a trestle near Nicholson, Ga., completely wrecking 4 cars.

10th, a mixed train on Southern Kansas was derailed near Quenemo, Kan., by a defective truck, wrecking several cars.

9th, p. m., engine of passenger train on Grand Trunk broke a parallel rod near Ivanhoe, Ont. A moment later the other parallel rod broke, derailing the engine.

9th, an overloaded car in freight on Toledo & Ohio Central derailed at New Reigh, O., wrecking ten cars.

17th, engine of passenger train on Chicago & Alton ran over a horse near Mexico, Mo., and was derailed.

SNOW.

1st, engine on Northern Pacific derailed in a snow drift near Garrison, Mont., killing engineer and seriously injuring fireman.

2d, p. m., snow-plow on Union Pacific pushed by 2 engines derailed near Garrison, Mont. Engineer killed and 10 men injured.

27th, a. m., snow train, consisting of 4 engines and 1 car, on Marquette, Houghton & Ontonagon derailed near Negaunee, Mich.

WASHOUT.

8th, freight on Chicago, Burlington & Northern ran into a washout near Hay, Ill., wrecking engine and 12 cars.

14th, p. m., freight on California Southern ran into washout near Del Mar, Cal.

20th, a. m., passenger train on Baltimore & Ohio ran into a washout near Bradshaw, Md., derailing several cars.

LANDSLIDE.

19th, a. m., freight on Reading & Columbia derailed by landslide near Reinholds, Pa.

ACCIDENTAL OBSTRUCTION.

14th, a. m., freight on Pittsburgh, Ft. Wayne & Chicago derailed in Chicago, Ill., by a brake-beam which had dropped on track, piling up 3 cars in a bad wreck.

15th, night, snow-plow and 8 engines on Central Pacific derailed by broken snow-shed near Colfax, Cal.

16th, passenger train on Memphis & Charleston ran into a hand-car loaded with steel rails near Memphis, Tenn., wrecking the engine.

19th, very early, freight on Pennsylvania derailed near Collin's Station, Pa., by some cars of a train which had just been wrecked on adjoining track. The two mishaps piled up 21 cars in a bad wreck.

22d, night, stock train on Central Pacific ran into caved in snow-shed near Tamarack, Cal., wrecking several cars and killing a brakeman.

MALICIOUS OBSTRUCTION.

4th, very early, passenger train on Pittsburgh, Cincinnati & St. Louis struck a sleeper which had been placed on the track near Coshocton, O., derailing the engine.

7th, p. m., passenger train on Carolina Central was derailed near Charlotte, N. C., where a rail had been removed by train wreckers. The engine rolled down a slight embankment, fatally injuring engineer and fireman.

WIND.

17th, very early, freight on Denver & Rio Grande derailed by high wind near Colorado Springs, Col.

17th, very early, passenger train on Denver & Rio Grande blown from the track by a high wind near Colorado Springs, Col. A mail car took fire and was burnt up.

17th, a. m., passenger train on Union Pacific blown from the track by high wind near Denver, Col. One passenger hurt.

17th, a. m., passenger train on Union Pacific blown off a bridge near Como, Col. Several passengers and trainmen injured.

19th, a. m., passenger train on Utah & Nevada was blown from the track near Black Rock, Utah, killing conductor and injuring a number of passengers.

UNEXPLAINED.

1st, freight on Virginia Midland derailed near Chatham, Va. Twenty-four cars piled up in a bad wreck; 1 trainman killed.

1st, night, the tender in a freight on New York, Lake Erie & Western jumped the track near Port Jervis, N. Y.

3d, passenger train on Oregon Short Line derailed near Harris Fork. The whole train except the 2 rear cars went down a 25 ft. bank. One trainman killed and 1 injured.

3d, p. m., passenger train on New York, Pennsylvania & Ohio derailed at Silver Creek, O.

5th, passenger train on New York, Philadelphia & Norfolk derailed near Delmar, Del. Engine badly wrecked; fireman jumped and was injured.

7th, p. m., passenger train on Oregon Railway & Navigation Co.'s road derailed at Waitsburg, Wash. Ter.

11th, p. m., passenger train on Toledo, St. Louis & Kansas City derailed at Fancher, Ill. Passenger car rolled down a high embankment, injuring 4 passengers.

12th, freight on Nashville, Chatanooga & St. Louis derailed near Cowan, Tenn., wrecking an engine and 8 cars. Brakeman Henry Ward Beecher was slightly injured.

12th, a. m., a car in freight train on Boston & Albany derailed at Thorndike, Mass

16th, car in a freight train on Boston, Hoosac Tunnel & Western jumped the track near Eagle Bridge, N. Y.

18th, a. m., freight on Southern Pacific derailed near Lang, Cal., wrecking 7 cars.

19th, a. m., flat car in freight on Baltimore & Ohio jumped the track at Scipio, O., derailing 7 cars.

19th, a. m., passenger train on Western & Atlantic jumped the track near Atlanta, Ga.

19th, p. m., freight on New York, Lake Erie & Western was thrown from the track near Guymard, N. Y., wrecking 7 cars.

21st, p. m., freight on Georgia Pacific derailed near Villa Rica, Ga., and wrecked.

21st, evening, freight on New York & New England derailed at New Britain, Conn., wrecking two cars.

26th, p. m., passenger train on Lehigh Valley road derailed near Black Ridge Station, Pa., and part of it went over an embankment, injuring engineer fatally and fireman severely.

OTHER ACCIDENTS.

21st, noon, engine on Chicago & Eastern Illinois exploded its boiler just as it was pulling out of the Chicago depot, killing engineer and fireman.

20th, a. m., engine of passenger train on New York, Lake Erie & Western broke a parallel rod near Sheholen, N. Y.

1st, a. m., engine of passenger train on Syracuse, Binghamton & New York broke an axle of the hind driving wheel near Whitney's Point, N. Y. The wheel rolled down a bank into the river.

15th, very early, sleeping car in passenger train on Northern Central caught fire from an overheated stove when near Williamsport, Pa.

21st, a. m., a car in passenger train on Delaware, Lackawana & Western caught fire when near Bloomfield, N. J.

19th, truck of car in a freight on New York, Lake Erie & Western broke when near Middletown, N. Y.

2d, a. m., engine on Boston & Albany near Worcester, Mass., struck a hand car and threw it against a passenger train passing on the opposite track, tearing the steps from several cars.

22d, very early, heater exploded in a chair car on Wabash, St. Louis & Pacific, just as the train was entering Sidney Station, Ill., blowing out all the windows and shattering both ends of the car. The sleeping passengers were thrown in confusion about the floor, and some of them were seriously injured by broken glass and débris. The car caught fire from the lamps and from the fire under the heater and was almost entirely destroyed.

A summary will be found in another column.

Contributions.

Accident Report—Correction.

East Tennessee, Virginia & Georgia Railway,
KNOXVILLE, Tenn., March 16, 1887.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Under list of accidents for January I notice you have, on the 26th, an account of an engine of the East Tennessee, Virginia & Georgia exploding its boiler near Dalton, Ga., killing the engineer and fireman. We had no accident of this character, and have never had a boiler explosion since my connection with the road. I would be glad if you would correct the error.

C. H. HUDSON,
General Manager.

Supervision of Enginemen.

CLEVELAND, March 25, 1887.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I noticed some time ago, in a New York paper, a statement that some master mechanic was in the habit of prowling around nights at small way stations and other unusual places, for the purpose of catching his engineers doing things they ought not to, such as drinking beer, carrying friends in the cab, running recklessly, etc. I wondered whether this practice was very common among such officers and whether it would do any good in the long run. How often does such a man find an engineer or fireman acting so badly out of the way that he feels paid for his time and trouble? Cannot good engineers be trusted to do their duties from other motives than fear of discovering a detective at their elbow? If they cannot, would it not be well to pay the men more, so they would have more self respect and pride in their work? There has been much complaint at spotters among conductors, and many superintendents are far from satisfied with the work of that kind of fellows, even though they continue to employ them; is not this hunting of engineers about the same thing in a different form? I would like to hear from some of the old engineers on these questions, and especially from master mechanics and roundhouse foremen, who have been set up from engineers and who thus can give experience on both sides of the question.

WESTERN.

Experiments in Steam Heating.

Chicago, Milwaukee & St. Paul Railway Co.
MILWAUKEE, March 26, 1887.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I have just noticed your report of discussion of steam-heating methods at the last meeting of the Western Railway Club, and as some results obtained on our road by the continuous system with steam from the locomotive may be useful as a basis for computation by others, I wish to correct some errors which have been introduced into the paragraph you devote to my remarks.

We got a number of tests at a temperature of from 20 to 40 degrees above zero, and obtained, as an average, 75 lbs. steam condensed per car per hour, when running at usual rate of speed. I do not place a very close dependence upon figures at this temperature, for the reason that we had 270 ft. 2 in. piping in each coach for radiating surface, which was an excessive allowance in mild weather, so that we were unable to keep the temperature in coach down to 70 degrees without opening all ventilators and shutting off steam occasionally, thus destroying uniformity of conditions. Our tests at 15 and 10 degrees are, however, quite exact enough for practical purposes.

The heating-up tests were made while standing, and were thought to be useful for the reason that they would probably fix the minimum time required for getting train in a habitable condition. I fixed upon about five pounds pressure in coaches as the highest useful pressure, because this is enough to insure good circulation, and subjects couplings and valves to little strain, while practically nothing would be gained in heating effect from higher pressure, because the *total* heat of unit of steam increases little with moderate rise of pressure.

The estimate of 17½ lbs. coal per car per hour for heating was based upon figures obtained at 10 degrees above zero (115 lbs. steam condensed), and the supposition that 6½ lbs. water would be evaporated by 1 lb. coal. This latter figure, I have no doubt, is high under unfavorable conditions, such as poor Western coal and insufficient boiler capacity. Perhaps 5 lbs. water to 1 lb. coal would be a closer figure, which would mean 23 lbs. coal required to heat one car one hour. The 8½ per cent. of locomotive capacity estimated to be required for heating was based on figures actually obtained for evaporation by a 17 × 24 passenger engine when hauling a train of *eleven* coaches on a level track at 40 miles, on the supposition that there was no reserve capacity in locomotive.

The condensation figures given show a steady increase as the temperature falls, but I think it would be very risky to calculate upon amount of steam required to heat a train at, say, 30 below zero from figures obtained at ten above, and this, taken with the fact that we can by no means be certain how the traps and valves will perform their functions under severe conditions, will compel us to wait for next winter for a final settlement of the practicability of the system for our Northwestern climate.

GEO. GIBBS,
Engineer of Tests.

Engineers and Education.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your appreciative notice of Captain Eads, you say "he combined courage, enthusiasm, persistence, insight and judgment in such measure to amount to genius. He had, to an uncommon degree, the instincts of an engineer, and it is the world's loss that in his youth he did not get a thorough and scientific training."

"It goes without saying" that a thorough scientific training is a desirable acquisition, particularly for an engineer. But let us say a few words on the subject. Do the thoroughly trained engineers of the present equal in executive ability and fertility of resource the untrained engineers who have passed off the stage? I think you will agree with me they do not.

It is admitted that 80 years ago all farmers' homes were, to a great extent, factories or workshops, in which the wants of farmer and farm were supplied to an extent now not thought of, and it is nearly impossible for the present race of engineers to get that training in "two-handedness" which early stamped American engineers with their most successful traits. But it seems something of their degeneracy should be ascribed to the thorough scientific training they now receive.

As an example of the sense with with a scheme of scientific training may be arranged, let us take the courses of engineering now in force in an institution founded and endowed greatly by a man who, having received his education from contact with things and not theories, left the arrangement of details to professional teachers.

In a four years' course leading to the degree of civil engineer, we find for the whole of the first year the student has recitations for five hours a week in French or German, with no other language in that year or in the rest of the course. Nor is other language found in the graduate courses in bridge, railroad, sanitary, hydraulic, or geodetic engineering. The first year of the course in mechanical engineering has the five hours per week in French or German, but no other language is taught.

The fact that Spanish or Portuguese, a closely allied tongue, is the language of Mexico, Central and South America, and that Portuguese is the trade language of all South Africa, the countries that offer about the only field of occupation for our redundant engineering population, seems utterly unknown to these gentlemen; for though the institution presents the inestimable privilege to the engineering student of instruction (during the time of the electives) in Sanskrit, Anglo-Saxon and the Romance languages and literatures, there is no professor, tutor or instructor in either Spanish or Portuguese.

Far be it from me to insist that my views are correct, but it seems doubtful if those grave and theoretical professors expect their pupils to invade France and Germany to earn reputation and wealth on the soil of Europe. Is it not more than merely a supposable case that all this German and French is taught in the hope of bending the young American mind toward that of the German techniker, and that the easy narration of precedents found in books is more satisfactory to the teacher than original research? Or, if I might borrow the phrase of another, the instruction consists greatly in what one fool thinks of what another fool has thought! Under teachers who see so clearly the necessities of our engineering students would Captain Eads have developed courage, enthusiasm, persistence, insight and judgment, or a blind adherence to precepts he found laid down in books?

ALUMNUS.

Investigation of the Forest Hills Disaster.

The Railroad Commissioners went to Roslindale and Dedham and took the testimony of several injured passengers, but elicited nothing of importance.

Thomas P. Lally, who had charge of the chemical fire engine which was called at the time of the disaster, testified to finding the fire, and said that only prompt action prevented a general conflagration.

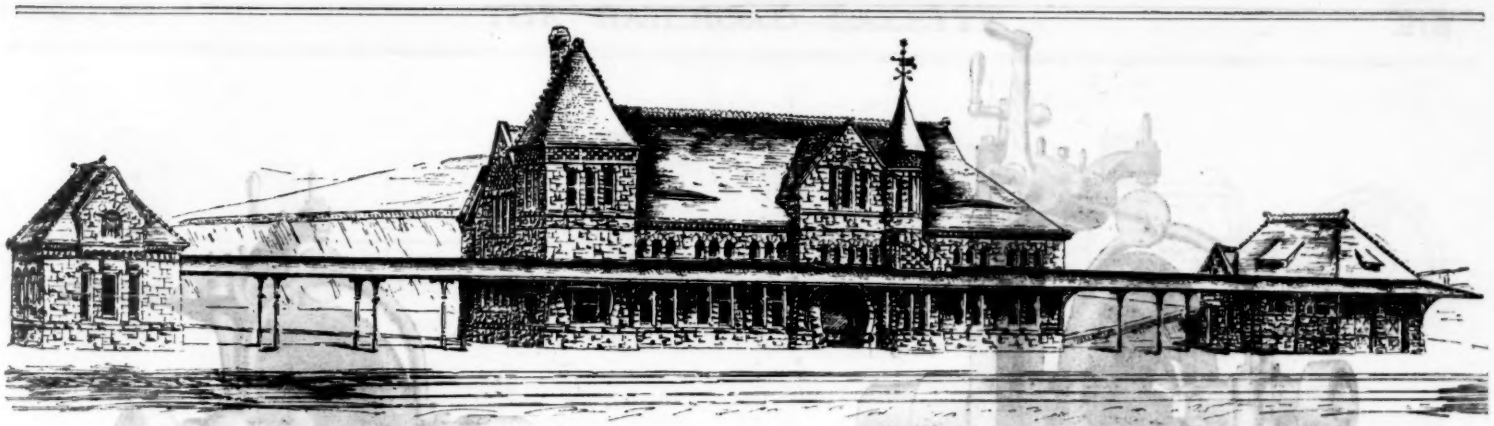
President Henry A. Whitney, of the Boston & Providence, who was Acting President in 1875, said the road now generally employs Mr. Minot, civil engineer, to superintend bridge contracts, but in 1875 and 1876 did not have an expert, depending wholly upon Bridge Superintendent George Folsom, whom he (witness) still believes to be competent to erect "plain, simple bridges built at right angles." Continuing, Mr. Whitney said:

I have never heard any complaints about the bridge, except that of Mr. Herschel (Railroad Commissioner). I agreed with the Superintendent that a test should be made, which I afterward learned had been made. The bridge was reported sound and safe. In conversation with Mr. Robson after a directors' meeting I told him that George Folsom had made an examination and pronounced the bridge perfectly safe. I was not conversant with the terms of the contract for rebuilding the bridge. I know that the bridge was tested after completion, but do not know the details of the test. I considered Mr. Folsom's examination amply sufficient at the time; was not aware at the time that this was the first iron bridge which Mr. Folsom ever had anything to do with.

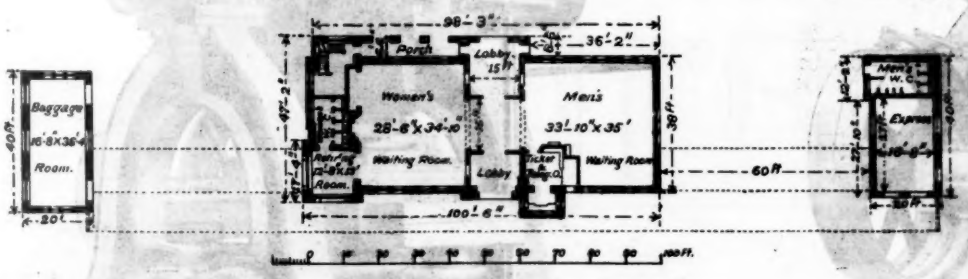
Directors Robson and Balch testified to the confidence which they felt in the bridge. Mr. Robson had traveled over the bridge occasionally and had never noticed any peculiar motion, and Mr. Balch never had the least anxiety regarding the bridge, and went over it frequently. He said that at a director's meeting President Whitney stated that it was proposed to rebuild the bridge, but it was not regarded as a matter of safety. There was no discussion at the time regarding the defects of the bridge.

Professor George L. Vose testified that he was not in the employ of the railroad company, but examined the bridge for his own information, though Supt. Folsom had requested him on the morning of the disaster to collect any parts of the bridge that might be wanted as evidence. Continuing, he said: I think the bridge in its general plan was a standing invitation to be knocked to pieces, and I think the immediate cause of the trouble was those broken links. Don't care whether the train was off the track or on it, or whether there was a broken axle or not—if those things did happen, they were simply the last straw that broke the camel's back. The bridge was a miserable trap at the start. The hangers tell their own story; they were broken about half way off to begin with. That is very badly welded iron; when you see such bad welding as that in one place you are bound to suspect the whole of it—the quality of the material and all. The hangers were in such a position that they could not have been examined except a very little of the bottom of the smaller link. That is not a good method of construction.

Henry Manley, assistant city engineer of the city of Boston, said he found on the ground near the bridge, the morning of the disaster, the keeper-nut belonging on the end of



PASSENGER STATION AT ANN ARBOR—MICHIGAN CENTRAL RAILROAD.



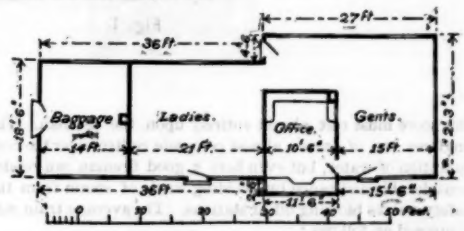
Passenger Station at Ann Arbor—Plan of Ground Floor.

PASSENGER STATION AT DEXTER, MICH.—M. C. RAILROAD.

Passenger Stations—Michigan Central Railroad.

Two stations on the Michigan Central, cuts of which are given in this issue, show a commendable desire to introduce taste and variety. The aim of the company is not to have standard types. Mr. F. H. Speir, of Detroit, was the architect of both stations, and Messrs. J. L. Gearing & Sons, of Detroit, were contractors for the Ann Arbor station. This structure is built entirely of dressed bowlders or hard heads of various colors. The main roof is of slate; the roof of the larger tower is red tile, and that of the small tower is copper. The interior finish is red oak throughout; the ticket office is quartered red oak. The floors are maple, the vestibule laid with French tiles. The clear story windows are stained glass. The building is heated by James McEwan's (Detroit) hot water heater. In the womens' waiting room is a large fire place, which, it is to be hoped, will be used, and will not stand as a formal tribute to the past. Some heavy grading was done about the site, but the sodded slopes add to its beauty.

We have no description of the Dexter station. The fact should be noticed, however, that while men and women are provided for at Ann Arbor, ladies and gents are expected to frequent the Dexter station. The difference is that Ann Arbor is a university town.



Dexter Station—Floor Plan.

the large pin running through a joint block of the top chord. There was evidence that the nut had been recently placed on the pin, and the threads in the nut were not worn. How it came off the pin witness was unable to explain.

Engineer Thomas Doane, the expert employed by the Railroad Commissioners, on March 23 went, with others, to the wreck and found the piece of rail in about the position predicted by Mr. Richards in his testimony, as reported last week; but whether the appearance of the rail or Mr. Richards' theory gives any light on the cause of the fall of the train is not stated.

The Coroner's inquest has begun at Jamaica Plain, but the proceedings are not made public as yet.

Erie.

The New York, Lake Erie & Western Railroad Company proposes to continue during the coming season the work begun last summer of ballasting its main line with broken stone and furnace slag, or gravel where the former cannot be obtained. Two stone breakers are now at work on the Eastern Division and one on the Delaware Division, each one capable of crushing 350 tons per day of ten hours. The quarries have been worked all winter and the crushers whenever the weather permitted. Large quantities of stone have been accumulated and distributed as far as possible, so as not to retard the work when spring opens and when the necessary cross-ties have been obtained. It is contemplated to finish the Eastern Division with stone ballast during the coming summer, and replace all the 63-lb. steel with the new pattern 74-lb. rail, 10,000 tons of which were laid last year. The joints of this rail consist of 40-in. angle bars with six bolts supported on three ties, and have, so far, given excellent results. The old section of the rails in use on the Erie and N. Y., P. & O. controlled the shape of the new 74-lb. standard to a great extent. As it was very desirable to use one uniform section of splice bar, the section of all the rails between the head and base was made the same, as well as all the necessary punching. This has simplified matters wonderfully, and the road has already assumed a look of uniformity and care that will be greatly enhanced when all the old switches, frogs and stands have been changed to the new standards, and for which the Carlisle Manufacturing Company has a contract with the Erie for over a thousand of each, to be delivered early this summer. Besides the great improvements made and contemplated in the road-bed, the replacement of all wooden structures with modern iron bridges is going on rapidly, and heavy plate girders, some of them 90 feet span, are being, in many cases, substituted for the light pin connected bridges, built some 15 years ago, and not at all adapted to the heavy weight and high speed of the modern locomotive. Conspicuous among the bridges lately rebuilt is the one over the Susquehanna, at Susquehanna, taking the place of a single track Post truss with cast-iron top chords. The new bridge is double track, entirely of wrought iron and built strictly under the latest and best specifications. Equally important is the improved appearance of all its depots and stations. The buildings are being painted, the surroundings cleaned and ornamented, and many new structures are taking the place of old ones, and others are added to increase and encourage local travel, especially within the suburbs of New York between Jersey City and Turner's. The handsome depot at Rochester is about ready for use, and in Jersey City the Erie will soon be in possession of the most commodious and best passenger station of all the railroads terminating there. The contract for this building was awarded last week to Messrs. Cofrode & Saylor, of Philadelphia.

Performance of a Wootten Engine.

The following particulars as to the actual performance of a Wootten engine in regular work are perhaps the fullest that have ever been published. The figures have been kindly supplied to us by Mr. John W. Cloud, the Superintendent of Motive Power of the New York, Lake Erie & Western, and show the work done by one of the passenger Mogul engines with Wootten fire-box, recently built for that road by the Baldwin Locomotive Works.

These engines have been recently illustrated and described in these columns,* and are unusually heavy and powerful engines for passenger traffic. Their principal dimensions are as follows:

Cylinders, diameter and stroke	20x24
Driving wheels, diameter	68 in.
Tractive power per lb. average pressure in cylinders	141.2 lbs.
Weight in working order:	
Drivers	95,300
Truck	18,700
Total	114,000
Average weight of tender at commencement of trip with full tank and 16,400 lbs. coal	82,717
Average weight of tender at end of trip with 1,200 gallons of water and 5,550 lbs. of coal	56,667
Mean weight of tender	69,292
Average running weight of engine and tender	183,292
Average weight of cars	242,888
Average weight, engine, tender and train	426,180

The performance in regular work of an engine of this class, No. 137, is given in the table below. The trips were made between Susquehanna and Hornellsville, 139 miles apart. This division is practically level, the prevailing grades being 5, 8 and 11 ft. per mile, and never exceeding 14 ft. per mile. The curves, however, are somewhat sharp and numerous.

The engine ran from Susquehanna to Hornellsville on one day, taking train No. 1, and returned on the following day taking train No. 8. In the following table, one trip has been omitted, as on that occasion the engine broke a driving spring and left the train at Elmira, coming on with a later train.

The consumption of coal includes that used in lighting up, an average of 2,200 lbs. per day being used for this purpose. On one trip, the coal board gave way and 2,000 lbs. of coal was lost and spilt on the road. This amount is not included in the consumption given below.

It will be observed that the consumption of fuel differs greatly on different days. On Dec. 16 only 8,000 lbs. of coal was burnt, while on the following day nearly double this quantity was consumed. This difference does not appear to be due to any decided difference in the skill of the firemen employed. The following table shows the average performance per trip of the three different firemen:

Fireman.	Speed whilst in motion. Miles.	Water used. Gals.	Coal used. Lbs.	Lbs. water per lb. coal. Lbs.	Weight of train. Lbs.
Crawford	40.4	6,289	10,416	5.03	418,210
Foley	40.8	6,307	11,125	4.72	421,400
Elston	43.6	6,160	11,250	4.56	423,100

It will thus be seen that while Fireman Crawford evaporated most water per lb. of coal, his average train was lighter and the speed considerably less than with Foley and Elston. The latter shows the lowest evaporation, but had, on the average, a slightly heavier train run at a greater speed.

The engineers were not always mated with the same fireman. The average results per trip are as follows:

Engineer.	Average speed whilst in motion. Miles.	Water used. Gals.	Coal used. Lbs.	Weight of engine, tender and train. Lbs.
Delancy	42.6	6,370	9,500	426,700
Pettit	41.3	6,002	10,833	414,833
McDonald	40.4	6,289	10,416	418,250

Mr. Delancy thus appears to have had the advantage of the best firing (he had two different firemen), while Pettit used the smallest amount of water and the largest quantity of coal. On the whole, these figures show that the performance of the engine was much alike with different engineers and firemen.

It should be borne in mind that in a Wootten engine the engineer and fireman are so widely separated that the engineer has little power to control or instruct his fireman as to the consumption of fuel, and therefore any blame or credit on

* See the *Railroad Gazette*, Dec. 17, 1886.

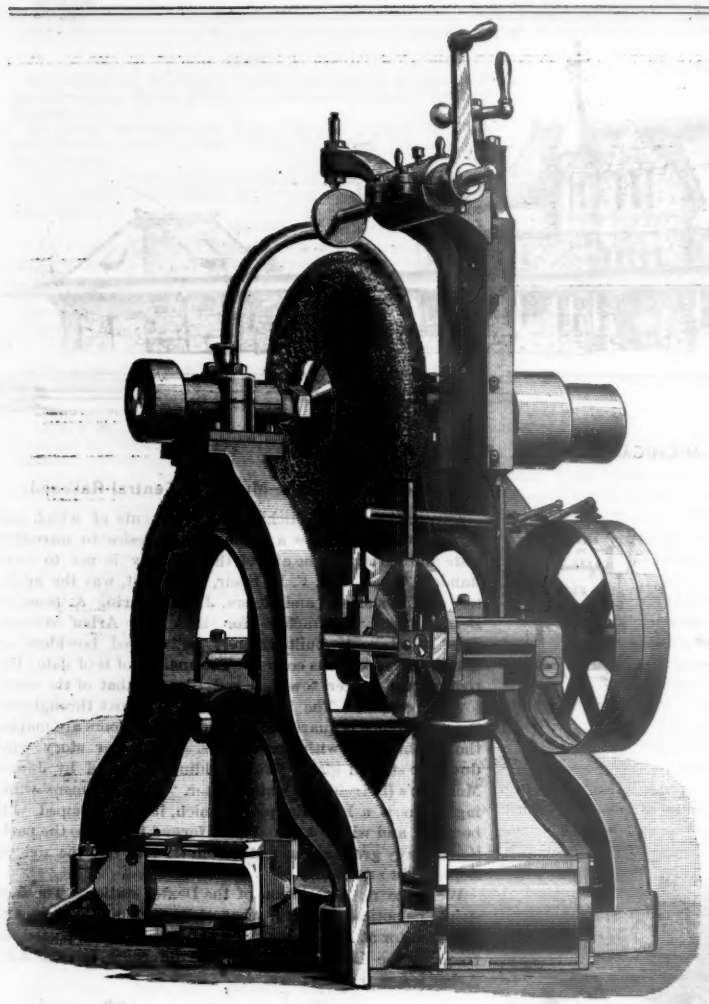


Fig. 1.

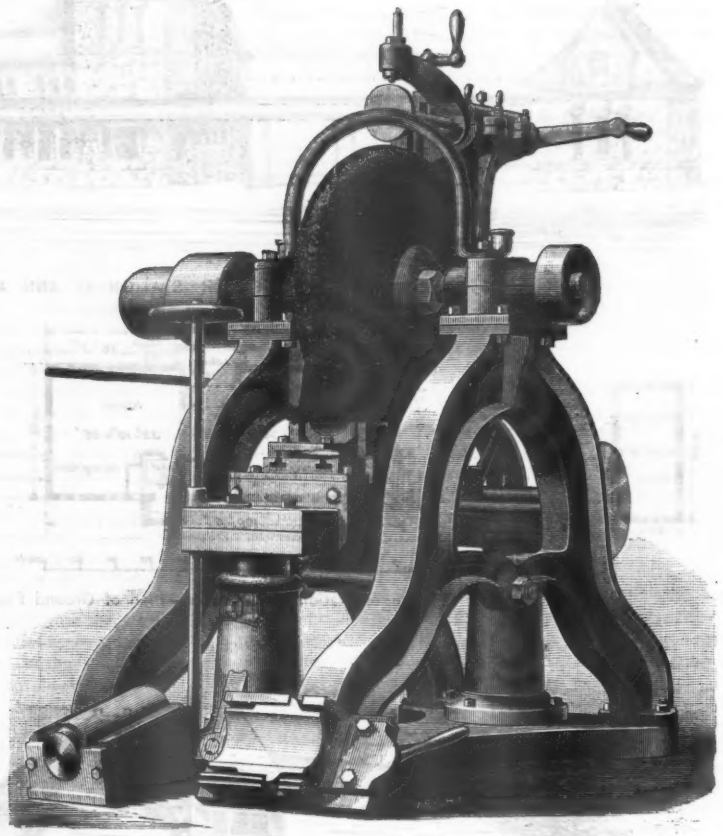


Fig. 2

CAR BRASS GRINDING MACHINE.

Made by the TANITE CO., *Stroudsburg, Pa.*

this score must rest almost entirely upon the fireman. The engineer has, of course, almost complete control over the consumption of water, but even here a good fireman can render considerable assistance by avoiding waste of steam from the safety valves blowing off at stations. The average train was composed as follows:

Postal car	.93	Hotel	.13
Baggage car	1.00	Official	.07
Pullman parlor	1.00		
Smoker	1.00	Total number of cars	5.80
Coach	1.67		

The following table shows the speed, delays at stations and on the road, the total number of stoppages, the consumption of water and coal, and the average weight of the train and number of cars:

NEW YORK, LAKE ERIE & WESTERN RAILROAD.

Performance of Wootten Mogul Engine No. 137, running express passenger trains between Susquehanna and Hornellsville.

Date. 1886.	Time, including stops.	Time in motion.	Average speed. Including stops.	Average speed. Excluding stops.	Number of stops.	Water used.	Coal used.	Lbs. water per lb. coal.	Lbs. coal per mile.	Average steam pressure.	Weight engine, tender & train	Number cars.
	H. M.	H. M.	M'ls.	M'ls.		Gals	Lbs.	Lbs	Lbs	Lbs.	Lbs.	
Dec. 2..	3 50	3 32	....	...	11	7,215	12,000	....	....	138	441,200	6
Dec. 4..	3 49	3 22	...	....	11	6,565	13,000	....	....	140	447,300	6
Dec. 5..	4 46	4 21	....	....	13	6,500	10,000	....	....	128	433,340	6
Dec. 6..	3 44	3 22	....	....	11	6,792	10,800	....	....	140	431,400	6
Dec. 7..	3 43	3 21	....	....	13	5,395	10,200	....	....	128	378,650	5
Dec. 8..	3 38	3 15	....	....	11	6,110	10,000	....	....	134	434,400	6
Dec. 9.	3 38	3 10	....	....	13	5,493	8,500	....	...	135	378,240	5
Dec. 10..	4 11	3 9	....	....	11	6,565	11,500	....	...	138	434,400	6
Dec. 11..	3 33	3 14	....	....	13	5,720	8,500	....	....	135	381,650	5
Dec. 13..	3 49	3 23	...	....	11	5,818	11,500	....	....	135	434,400	6
Dec. 14..	3 38	3 14	....	....	13	6 435	10,010	....	....	135	505,250	7
Dec. 15..	3 50	3 21	....	....	11	7,215	13,000	....	....	135	434,400	6
Dec. 16..	3 38	3 10	....	....	13	5,850	8,000	....	....	130	381,650	5
Dec. 17..	3 36	3 8	38.6	44.1	11	6,760	15,000	....	....	138	494,750	7
Dec 18..	3 43	3 14	....	....	13	5,590	10,000	....	....	135	381,650	5
Average.	3 50	3 21	38.26	41.5	12	6,208	10,800	4.82	77.7	135.6	426,180	5 8

Machines for Grinding Car Brasses.

The accompanying illustrations represent machines for grinding the surface of a car brass where it bears on the journal, and filleting the ends of the bearing to the proper curve. The former machine is shown in figs. 1 and 2, while the filleting machine is shown in fig. 3, a detail view of the emery wheel used being given in fig. 4. Both machines are made by the Tanite Co., of Stroudsburg, Pa.

Figs. 1 and 2 are two views of a machine for shaping car brasses to any radius, and show the machine at work. The fixture by which an ordinary square-faced emery wheel is rounded on the face to the radius of the car brass, by means of a diamond tool, is also shown, and may be described as follows:

The machine shown in figs. 1 and 2 has vertical planed ways attached to the side frame of the machine. A diamond turning tool apparatus is moved up and down on the vertical ways by a vertical screw connected with a handle as shown in fig. 1. The small disk shown above the wheel is the gauge by which to set the diamond tool, which is represented as touching the upper part of the disk. The first operation is to slip this disk gauge on the spindle and insert spindle and disk in the journal as shown. The nuts which hold the diamond tools are then loosened, and the diamond tool—which is a screw having vertical slots planed in it, and a crystal of carbon (diamond) at its lower point—is then screwed down till the diamond touches the gauge disk, and the check nuts are again tightened.

It is evident that the point of the diamond tool will describe a circle of the same radius as the disk gauge, and that if the latter is of the diameter required for the brass the emery wheel will be rounded to that radius and will consequently grind the brass to the curve required.

When the diamond tool has been accurately adjusted to touch the disk gauge the disk and spindle are removed, and the vertical slide is lowered until the diamond point will just touch either *corner* of the square-faced emery wheel, which is to be turned. By means of the handle nearest to the spectator the arm holding the diamond tool is then made to describe a half circle, and as the vertical slide is slowly lowered the diamond tool will at first cut off the corners of the square-faced emery wheel and then gradually change the face to a geometrically exact curve. It is evident that nothing but a correct curve can be produced, and that no carelessness or ignorance can make an imperfect one.

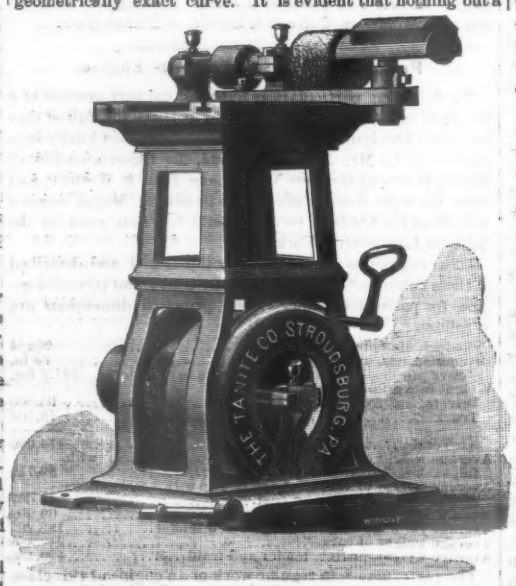
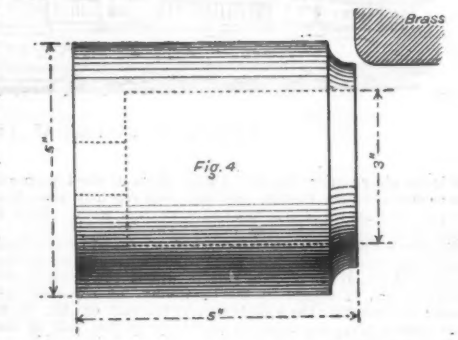


Fig. 3.

Car Brass Filleting Machine.

Made by the TANITE CO., *Stroudsburg, Pa.*



Emery Wheel for Filleting Car Brasses.

If the brasses to be ground are so accurately molded that but little metal has to be removed, then the gauge disk may be made to exactly fit the curve of a finished brass, but if brasses are so molded that much metal has to be removed then the heat of grinding will expand the brass, and the curve be too small when cool. In such a case the gauge disk and wheel have the curve so increased as to compensate for the expansion.

The mechanism by which the car brass is traversed to and fro is clearly shown in the engravings. The brass is held in a chuck, which is shown in position in fig. 2. Separate views of the chuck detached are also given, as it is depicted both in fig. 1 and in fig. 2 as lying at the foot of the machine. The brass is clamped between the jaws of the chuck by a cam motion actuated by a handle shown. The chuck fits into planed guides and thus travels exactly square with the motion of the wheel. The table is moved horizontally to and fro by the crank and connecting rod. The table also rises and falls on planed ways, being pressed up by springs. The hand wheel gives vertical adjustment to the whole bed by means of a chain beneath it. There is a pulley by which a suction fan, to remove dust, etc., may be driven. The machine is claimed to be capable of finishing about 500 car brasses per day.

Machines on this principle have been used for several years with satisfactory results. The machine shown in figs. 1 and 2 embodies, however, some recent improvements in detail. An arched brace rod has been added to stiffen the machine. The fast and loose pulleys have been increased, both in diameter and width of face, and some improvements have been made in the crank.

Fig. 3 shows an entirely new machine for grinding fillets on the end of car brasses. The machine is supported by a cast-iron frame, inclosing at its base the counter shaft and pulleys, which drive an arbor on which is carried a cylindri

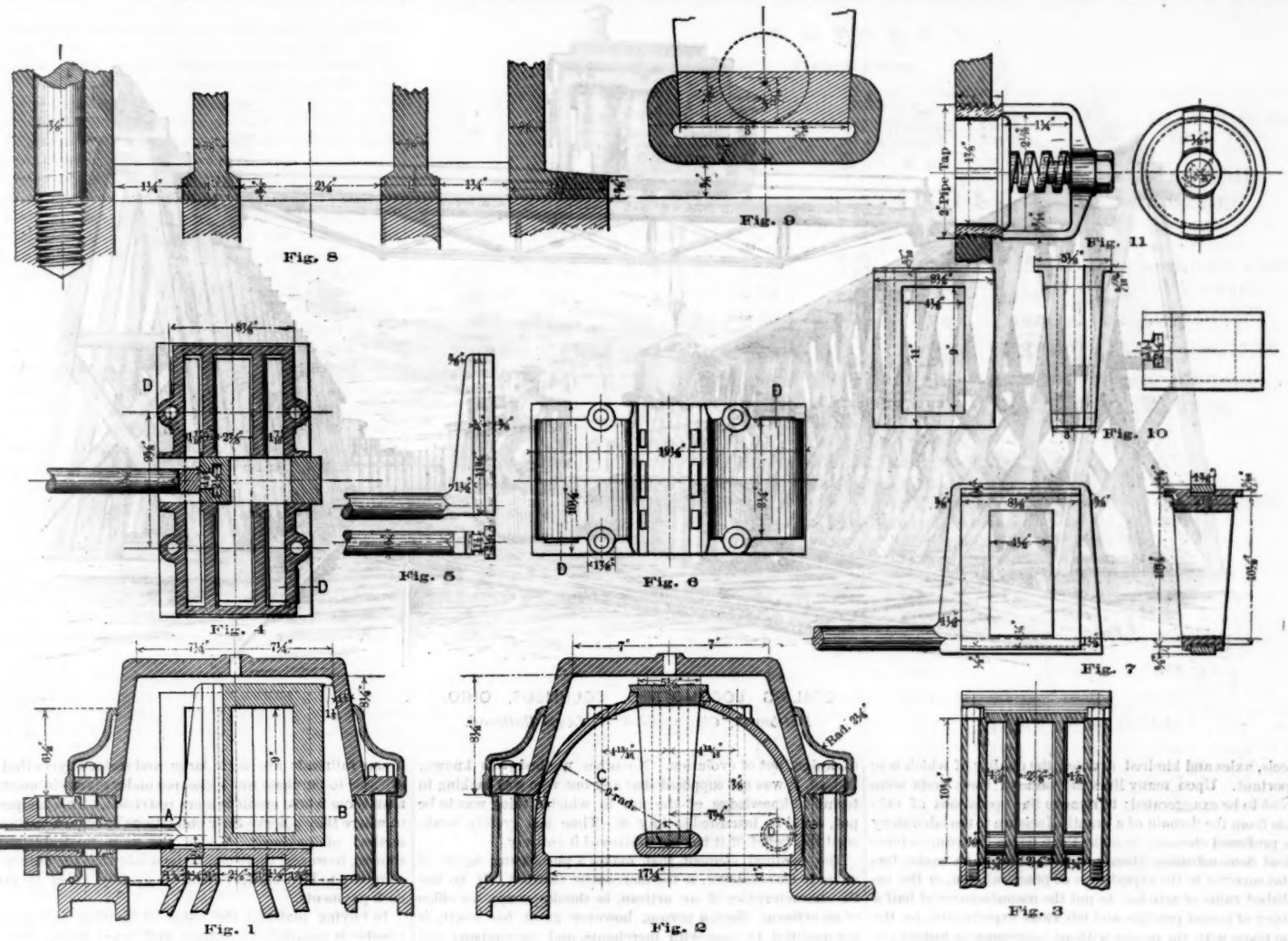


Fig. 8

Fig. 9

Fig. 11

Fig. 10

Fig. 5

Fig. 6

Fig. 4

Fig. 7

Fig. 1

Fig. 2

Fig. 3

JACKSON'S PATENT BALANCED SLIDE-VALVE.

Made by the SPECIALTY MFG. CO., *Allegheny City, Pa.*

cal solid emery wheel. This wheel is 5 in. diameter and 5 in. face, with a hole 3 in. diameter. On the end is turned a concave curve corresponding to the fillet on the car brass (see fig. 4). A carrier, whose convex upper surface is fitted to curve of a finished brass, is attached to a shank which passes through the arm of a rest, and has a vertical adjustment. The brass is placed on the carrier, as shown in fig. 3, and pressed by hand against the emery wheel.

Jackson's Patent Balanced Slide Valve.

The accompanying illustrations represent a slide valve lately introduced by the Specialty Manufacturing Co., of Allegheny City.

The general arrangement of the valve, false face and steam chest is shown in figs. 1 to 4. The peculiar formation of the valve stem yoke is shown in fig. 5, or an ordinary yoke or buckle can be used, as in fig. 7. Fig. 6 is a plan of the false face looking downward. Fig. 8 shows in detail the manner in which the false face is bedded on the ordinary valve face.

Fig. 10 is a cross-section on an enlarged scale across the bottom of the valve, and shows the clearance allowed for the valve wearing down.

The relief valve is shown on fig. 11.

As shown in the drawings, the valve is applied to a Pennsylvania Railroad Consolidation engine. No change is made in the locomotive, except as regards the valve stem and buckle and steam chest cover. A false face is placed over the ports, and the valve works on this false face as shown. It is claimed that this false face is really no extra appliance, as a false face is rendered necessary sooner or later by the wear of the valves in an ordinary locomotive. The valve is placed in a vertical position, and worked on two faces slightly inclined from the vertical. The steam acting on the larger or top end of the valve keeps it pressed downward. As a valve with so slight a taper (1¼ in. in 1 ft.) might tend to jam, the valve is supported by two horizontal rubbing faces on the top of the false face. As these wear the valve comes down and takes up any wear on the inclined faces. It is, therefore, claimed that the wear of the valve will be equalized; or, in other words, that as fast as the inclined faces wear, and so tend to leak, the wear on the horizontal surfaces will let the valve descend, and so keep it tight.

It will be seen that the valve is really balanced and not merely "relieved" of some of the pressure upon it. The ports on each side being exactly similar, the pressure to keep it tight is constant, and is not influenced by the position of the valve. Most so-called balanced valves are relieved of a *portion* of the pressure on their backs. The pressure to keep them on their seats is, therefore, constant, and varies only with the pressure in the steam chest. This pressure is, however, partly neutralized by the pressure in the steam and exhaust ports, and this neutralizing pressure naturally varies and in some positions tends to lift one end of the valve off its seat. This action cannot occur with the Jackson valve, as the ports being alike, and on both sides of the valve, any pressure in the ports is neutralized and has no action whatever on the valve. The downward pressure which tends to keep the valve tight is constant, or rather varies only with the pressure in the steam chest.

The means adopted for avoiding the suction of air and ashes from the smoke-box when the engine is running without steam are noteworthy. Instead of admitting external air into the steam chest as usual, check valves communicating with the steam chest are placed in the false face.

When the engine is running without steam the piston pushes the air before it and through the check valve into the steam chest. It is claimed that the air merely circulates to and fro between the steam chest and cylinder and cannot be compressed in the cylinder. With ordinary valves the mischief is of course done while the exhaust is open, as the ashes and grit can only find their way into the cylinder through the blast pipe and exhaust port. It is also evident that the ashes are not sucked in when any compression exists in the cylinder, but by the advancing piston sucking air behind it. When the valve opens for exhaust by pre-release the piston sucks air down the blast-pipe, and it is at this point of the stroke that the mischief is done. The front side of the advancing piston pushes the air before it, and cannot draw in ashes, but rather tends to expel them. This mischief is done on the rear side of the piston, and it seems a little doubtful if Mr. Jackson's check valves will form an efficent safeguard against it.

The valve stem can be connected with the value, either by a yoke, shown in figs. 1, 4, and 5, or by the arrangement shown in fig. 7.

A pair of these valves have been running on a Pennsylvania Consolidation engine for several months. Several stop valves on this principle are being used for natural gas. These valves are, however, made in the form of a hollow plug. The principle is, however, exactly the same, as the hollow plug is merely a slide valve (with the exhaust port) bent round into a circle. The essential features, the working face slightly tapered from the vertical, the small horizontal rubbing faces, and the similar and opposite ports being all retained.

The Purchasing Agent.

[From a forthcoming treatise on "The Handling of Railway Supplies," by Marshall M. Kirkman. Copyright, 1887. Lack of space alone prevents the giving of more than brief extracts from this treatise on this important and hitherto undiscussed department.]

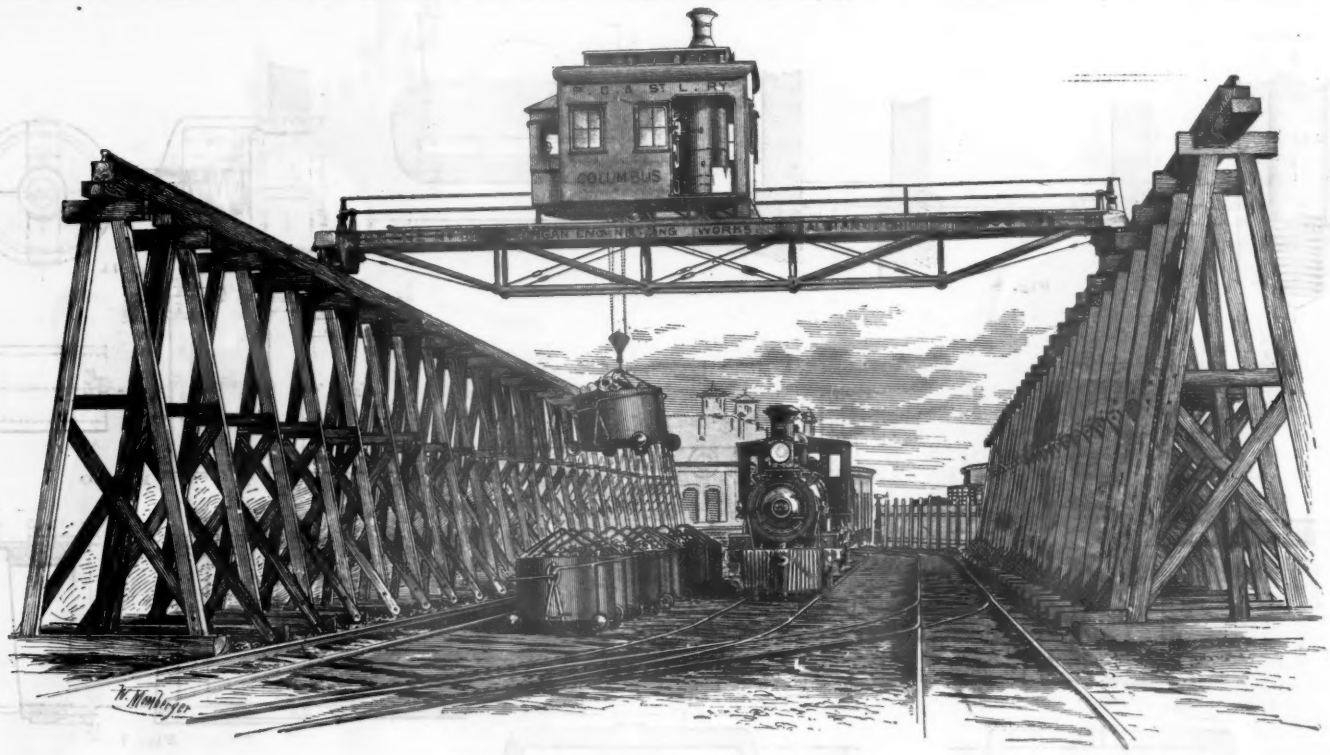
The purchase of goods embodies many varied talents and experiences. The ability to buy advantageously, depends largely upon the knowledge of men possessed by the purchaser and his skill in taking advantage of this knowledge. His value will, moreover, be dependent upon the discretion allowed him, and his judgment in exercising it. The position also requires technical skill. The person filling it must be experienced, otherwise his acts will not command the confidence or respect of his associates. His wisdom and fairness must be such that if he selects material contrary to the requisition made upon him, the person thus overruled will tacitly acquiesce therein and abide by the demonstration of its wisdom afterwards. Unless the operating officer has this respect for the purchaser, he will quite likely not use the article thus bought, or, if he does, will not give its advantages fair expression. The office of the purchasing agent requires minute knowledge of the physical affairs of the railroad employing him and the tact and patience necessary to give this knowledge expression.

The assistance that an experienced purchasing agent can extend to his associates is hardly to be estimated. His duties not only familiarize him with all new devices, but his observation enables him to point out those most likely to lessen expenses or add to the efficiency of a property. The office can not be made automatic. It must be vitalized by the presence of an experienced, able and strong man, possessing withal the amiability and tact in dealing with men that is requisite to give such a position effective force. Ability to sell at the best figure is a natural art possesed only by merchants, and in order to purchase cheaply, this art must meet its counterpart in the instinct to buy cheaply. The more nearly, therefore, the purchasing agent resembles the merchant, the more valuable he is likely to be to his employer. It will not only enable him to trade advantageously, but his selection will be characterized by good judgment, and his methods of business will be systematic, adaptable and thorough. Only such a man can escape the wiles of those who traffic in the wares of railroads.

The opportunities of a purchasing agent, no matter how great, while not making his judgment equal to that of the person who uses the material (provided the latter is informed as to the various devices from which selection may be made), is nevertheless of great value to a company as supplementing the knowledge of the latter and as a reminder to him that his requisition must pass under the careful scrutiny of an alert co-laborer.

* * * * * * * *

A shrewd purchasing agent will constantly supplement his knowledge of affairs by intercourse with those who have practical knowledge of the use of the wares he buys. He will be, moreover, constant in testing what he buys; in subjecting it to the most careful comparisons; in discovering in every intelligent and practical way its utility, durability and relative value. These experiments will not be matters of accidental or infrequent occurence, but will be carried on systematically from day to day, the same processes being observed over and over again with the same classes of material. This will be especially the case in regard to oils, varnishes, iron,



COALING LOCOMOTIVES, COLUMBUS, OHIO.
Pittsburgh, Cincinnati & St. Louis Railroad.

wheels, axles and kindred articles, the quality of which is so important. Upon many lines the value of these tests seem almost to be exaggerated; to remove the operations of railroads from the domain of a practical science to the laboratory of a professed chemist; to make them depend more upon theoretical demonstration than practical utility; to make formulas superior to the experiences of practical men, or the established value of articles; to put the manufacturer of half a century of honest practice and laborious experiments on the same plane with the novice without experience or history; to make the crucible superior to the furnace, trade marks the foot-ball of professors and experience the servant of theoretical speculations. There can be no doubt that, within proper limits, a laboratory is an essential thing to every railway company, but its manager must act in harmony with demonstrated experiences, in harmony with his natural ally and protector, the operating officer; otherwise injudicious practices will grow up and antagonisms be engendered that will destroy the purpose that this auxilliary force is so admirably intended to serve.

At one time more or less apprehension existed as to the disposition of those who purchased supplies to take advantage of their opportunities to aggrandize themselves. There was, undoubtedly, some cause for this suspicion in the early history of railroads, but it was neither general nor aggravated. Mankind are not now, nor ever have been, inherently dishonest. Moreover, those who purchase railway supplies are too intelligent not to know that corrupt practices, like curses, come home to roost. Isolated offenses may escape notice or permit of restitution, but continued disregard of the ethics of society cannot be remedied or long concealed. Those who practice them are at the mercy of the crowd, and their downfall is only a question of days or months.

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The practice of designating a particular person to buy the supplies that a railway company needs, is not universal, though more prevalent than formerly. At one time it was the custom to permit the various heads of departments to buy. The practice was based upon the presumption that they knew better than anyone else and that their knowledge of the technicalities connected with the thing they wanted made them especially fit to buy advantageously. The argument was, however, fallacious, and it ought not to have required demonstration to prove that a person hired for his skill as a blacksmith is not likely to possess the qualities necessary to enable him to cope successfully with the veteran merchant in purchasing the goods that a blacksmith requires, or in disposing of the débris that accumulates about a blacksmith's shop. It was found, moreover, that when purchases were thus distributed those making them were in many cases constrained to look upon the act as merely an incident of their office, something in the nature of a perquisite which they were at liberty to avail themselves of at pleasure. It resulted from this that excesses grew up where purchases were not supervised by an alert and trustworthy manager. There was, moreover, enormous waste of material through excessive purchases and duplications of orders, while prices became greatly inflated through the ignorance and veniality of purchasers. These disadvantages, were, moreover, coupled with frequent and shrewd suspicions that much of the material bought and paid for was never delivered, was purely mythical in fact. This was not only rendered possible but probable, by making the department that purchased the material and the department that received and inspected it, the same. A doubtful practice under any circumstances. These, and kindred practices, were the natural outgrowth of railway development. They were not the product of design, but of evolution. No other method was known. Indeed, it was not supposed that any one who was lacking in technical knowledge of the use to which a thing was to be put, could be intrusted to buy it. Time has greatly weakened this belief, if it has not destroyed it entirely.

The cardinal element that makes a purchasing agent of value to his employer, is the mercantile instinct. If he has the characteristics of an artizan, he should occupy the office of an artizan. Such a person, however great his worth, is not qualified to cope with merchants, and his company will only be worsted in such an encounter.

An essential requisite in a purchasing agent, and one that he, perhaps, appreciates more fully then any one else, is promptness. The operations of railroads are imperative, and while there is abundant opportunity to economize by cutting down excessive requisitions and cancelling others, this process must not be allowed to interfere with the prompt filling of necessary orders. When it does, the service suffers thereby. The work must be done continously and systematically. Indeed, a supervisory duty of almost any kind is more likely to be exercised wisely by a subordinate, or even a dull man, than by a higher or more capable person, if the latter is not able to give the subject the thought and attention it deserves. No one, it is probable, appreciates so heartily as the operating officers of a railroad the peculiar embarrassments that attend neglect to fill requisitions within the specified time. Such neglect involves the use of unfit and and expensive substitutes, and, in many cases, stoppage of important repairs or construction of work. Delay in the receipt of material that is needed also involves hurried and imperfect inspection when received, and a disregard of economical and responsible methods of distribution afterwards; involves not only loss, but confusion and scandal. Promptness may, therefore, be said to be an essential requisite.

The more the subject is studied, the more apparent it becomes that, except in peculiar and fortuitous circumstances, the interests of a company are enhanced by the employment of a particular man to buy its supplies. When they are purchased by many men, the manager must, practically, assume the duties of purchasing agent through the minute and unceasing vigilance that he will be required to exercise over those whom he designates to perform the duty. This is a duty that but few managers have the ability, time or disposition to perform properly.

In order to buy advantageously, it is essential that orders shall be far enough in advance of the need to afford the purchaser abundant opportunity to avail himself of the most desirable market in which to buy. The field is wide and requires both time and patience in order to take advantage of its opportunities. Undue haste is quite certain to add to the cost, and in many cases detract from the value of the article purchased. In order to buy cheaply, it is important that the purchaser should be wholly independent as regards the person from whom he buys. He must not only be free, but mastscrutinize the various sources of supply constantly and intelligently.

In order to buy cheaply, goods must be paid for quickly and promptly. The usury that a company suffers in the generality of cases for even slight indulgence is out of all proportion to the benefit received. An enormous percentage of the profits of many of our great merchants arises from the discounts they receive for paying cash. This discount is quite as valuable and available in the case of railways as in the case of merchants, and the fact is fully appreciated by purchasing agents. It is not, however, so generally understood by their associates, and it results that this profit is, sometimes, lost in consequence. The circumstances of the case, however, are greatly mitigated by the fact that the bulk of our railroads are such large and stable buyers that they are able to purchase much cheaper under given circumstances than those whose credit is more restricted. This is especially so where they observe their obligations in regard to time and method of payment. Under the most favorable circumstances, however, there can be no doubt that the ability of a company to buy cheaply will be greatly aided by prompt cash payments.

In buying material, the value of inviting bids whenever possible is generally recognized and acted upon. The exercise of this practice, when accompanied by the careful and unceasing "shopping" that is practiced by purchasing agents, has the effect of securing to a company every possible advantage that should attend the buying of large quantities of material in a widely extended market in which competition between sellers is both general and excessive. The value of "shopping" and inviting bids is not dependent upon the quantity of goods bought. The difference in the price asked, even for a small thing, by different merchants and manufacturers, is always sufficient to justify careful inquiry. Thus, in so small a matter, apparently, as the purchase of stationery that railways use and that is peculiar in many respects to different roads, the solicitation of bids will develop the most wonderful differences in prices; differences so remarkable that the aggregate amount that may be saved by judicious buying in the course of a year would not be believed by those who have not given the subject careful investigation. The same is true in regard to the purchase of lumber and almost every description of material.

To buy cheaply and advisedly, it is essential that the pulse of the market should be continually felt. This necessitates extended correspondence and constant and personal inspection upon the part of the purchaser. The systemization of railway business that is constantly going on will render it more and more easy each year to anticipate the current needs of a railway. One of the most effective avenues for accomplishing this will be to publicly and generally invite bids from manufacturers and others for supplies for a considerable period ahead. This process pre-supposes the preparation of of careful estimates in advance and the granting of considerable time in which to deliver the goods, thus permitting the exercise of careful preparation by sellers. The constant evolution in railway practice has not rendered this practice generally possible heretofore. The purchase of rails, ties and kindred staple articles has, however, formed an exception to the general rule. These supplies are of such magnitude and cost, and require so much prepartory labor, that it has always been necessary that their use should be carefully anticipated and contracts made for them long in advance of their need.

Some of the most carefully managed railroads invite bids by public advertisement for a year's supply of such articles as their known wants enable them to anticipate, without reference to the magnitude of the order. This secures the widest knowledge and consequently general and active competition upon the part of sellers. It is in every way creditable to a company practicing it, and when supplemented or attended by active and unceasing "shopping," secures to the purchaser every possible advantage. While there can be no doubt that every railway company will derive great benefit from the wisest solicitation of bids, it is probable that those companies that are remote from an abundant market will be more greatly benefited by such a course, than others better located. Their necessities compel them to keep a large supply on hand, while their restricted market places them at a disadvantage in buying, unless through general and judicious advertising they invite the attention of the world to their needs.

Coaling Locomotives, Columbus, Ohio.

The accompanying illustration shows the method adopted for coaling engines on the Pittsburgh, Cincinnati & St. Louis at Columbus, Ohio. Several different systems of coaling engines are in use at different locomotive stations on the line, the methods adopted being believed in each case to be those most suitable for local requirements, and the method by which engines are coaled at Columbus differs essentially from the various plans generally adopted.

Any system of coal pockets or bins filled by dump cars standing on an elevated track is unsuitable for that part of Ohio where dump or drop bottom cars are not used. The coal is, therefore, shoveled by hand from the railroad cars into large buckets holding from 2¼ to 3 tons each. These buckets have hinged self-latching doors in the bottom, and by means of a traveling crane are hoisted above the tender, and the latch holding the door being tripped, the bottom of the bucket opens and the contents are neatly discharged on the tender. Very little of the coal is spilt, and as the coal it not dropped any great distance, the breakage is not great.

The traveler runs on an elevated trestle work and spans three lines of rails. The crane is capable of lifting 10,000 lbs. and is worked directly by steam, a small boiler and water tank being carried on the crane trolley with the crab. The crane was built by the Morgan Engineering Works, Alliance, Ohio.

Our engraving is taken from a photograph, and shows an engine taking coal. The loaded coal cars are run on the track nearest the left hand trestle, and the coal is unloaded into the buckets shown standing on the ground between the tracks. One bucket is shown being hoisted preparatory to being dumped on the tender.

The coal wharf is generally busier than our engraving would imply, there being often as many as six engines taking coal at one time.

An engine can be fully coaled with 10,000 lbs. of coal in an average time of three and one half minutes. The buckets can of course be filled long before the engines need to take coal, so that when several engines want coal simultaneously the crane has only to lift and empty the buckets in rapid succession.

Typography of Time Tables.

The problem how to indicate on a time table, in the cleares manner, the five facts, "train stops," "train does not stop," "meets another train," "passes another train," "is overtaken by another train," having excited considerable interest at the Time Convention, and being a topic on which uniformity, if attainable, will be a real convenience, we print herewith some scraps of tables showing the methods which various roads take to accomplish the desired object. As was well said at the Convention, the matter is not vital, and involves no great principle; nevertheless, it is not beneath notice, and agreement on minor features may tend to better understandings on weightier questions.

The first practical obstacle to the adoption of any device beyond or better than the time-honored full-faced figures is the necessity for more space. Roads that have been in the habit of printing their whole table on a single sheet are averse to making any change which necessitates a departure from this custom; but the general tendency is unmistakably in the direction of providing all the space necessary, whether it require one page or a hundred; the right rule is seen to be, conform the cloth to the coat instead of cutting the coat according to the cloth. The second and perhaps the chief difficulty in adopting any of the plans which involve the use of very large or very small type for figures is the difficulty of finding a printing office with a sufficient supply of type for the purpose of printing a large table. The fact seems to be that printers have variety enough, but not enough, in quantity, of each pattern. This would seem to be easily remediable; a few large companies leading off would very soon create a demand which would be met by a corresponding supply, at least in the chief business centres. A few hundred dollars would very quickly bring from the type foundries a supply of figures sufficient to print all the time-tables required in New York or Chicago, or any other large city.

The samples shown require no special comment, as interested readers are conversant with the meaning of the figures of the various styles; and, moreover, the purpose for which a certain form of lettering or style of figure is used is not inflexible; different readers can suggest various changes in the plan of using full, medium or light face type. The various styles are grouped merely to facilitate comparison; of course, scores of other roads make use of similar methods and even more novel ones, some going to the extent of using a wide column, where "Meet No. 511" and similar notes can be printed out at length in full sized type.

NORTHERN PACIFIC RAILROAD.

Time Card No. 9. STATIONS.	From Mandan.	ATLANTIC EXP. No. 2. First Class.	
Jamestown 7.0	106.7	Ar.	9.05 P. M.
Eldridge 9.5	99.7	F	8.48 M23 P18

SPECIMENS OF FULL, MEDIUM AND LIGHT-FACED TYPE FOR TIME TABLES.

N. Y. C. & H. R. R. R.

Freight Trains.

43 Through Freight.	45 Through Freight.	47 Through Freight.	67 Way Freight.	49 Through Freight.	51 Through Freight.	53 Through Freight.	55 Through Freight.	Names of Stations and Passing Places.
A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	
								Niag. Falls.
6.45	9 45	2.45		4.50	**7.10**	**11.10**	3 45	**S. Bridge.**
6.15	9.17	2.10		4.18	6.40	10.42	**3.10**	Sanborn.
5.52	**8.52**	**1.45**	3.40 / 3.30	3.50 / 3.40	6 15	**10.20**	2.42	Lockport June.
5.43	8.41	1.30	3.18	3.23	6.03	10.05	2.30	W. Lockport.
5.40	8.38	1.25	3.10	3.20	6.00	10.00	2.27	**Lockport.**
5.20	8.18 / 8.03	**12 40**	**2.20**	2.57	5 37	**9.30**	**2 05**	Gasport.
5.02	**7.32**	**12.15**	1.45	**2.40**	5 17	9.05	1.45	Middleport.
4.45	7.10	11.40 / 11 00	1.02 / **12.35**	2.15	5.00	8.45	1.32	**Medina.**

BOSTON & ALBANY R. R.

Grand Junction Branch—Cottage Farm to East Boston.

Miles.	Miles bet. Sta.	STATIONS.	231 Freight.	72 Freight.	237 Local Freight.	20 Freight.	233 Freight.
		Cottage Farm	7.45	8.49 AM	10.35 AM	10.31 AM	10.50 AM
2.20	.16	**East Cambridge**	7.55	8.59	.....	10.41	11.00
2.36	.13	**Fitchburg Cross**	8.00	9.04	.....	10.43	11.05
2.49	.74	**Lowell & F. Jun.**	8.05	9.09	.....	10.46	11.10
3.23	.07	**Boston & Me. Jun.**	8.10	9.14	.....	10.51	11.15
3.30	3.50	**Somerville** (E. R. R.)	8.13	9.17	12.12 PM	10.53	11.18
6.80	.20	**Cary Cut** (E. R. R.)	8.27	9.32	12.24	11.05	11.30
7.00	.45	**Long Siding**	8.38	9.35	.....	11.07	11.43 mF 17
7.45	1.65	**East Boston Cut.** (E. Bos. Br. of E. R. R.)	8.39	9.43	.....	11.11	11.44
9.10		**East Boston**	8.45 AM	9.50 AM	12.40 PM	11.16 AM	11.50 AM

N. Y. C. & H. R. R. R.

STATIONS.	Miles.	16 Express and Mail.	8 Chicago Express.	10 St. Louis Express.	12 Cincinnati Express.
		A. M.	A. M.	A. M.	A. M.
Albany		**1.15**	**2.00**	**3.00**	**6.40**
West Albany	3.22	1.09	1.52	2.53	6.32
Karner	8.27	12.59	1.41	2.42	6.20
Athens Junc'n	13.75	12.49	1.30	2.31	6.08
Schenectady	17.00	**12.43**	**1.24**	**2.25**	**6.00**
Hoffmans	26.25	12.25	1.08	2.10	5.42
Crane's Vil'ge	29.14	12.19	1.01	2.05	5.36

BOSTON & ALBANY R. R.

North Adams to Pittsfield.

STATIONS.	Miles.	481 Passenger.	487 Passenger.	489 Passenger.	491 Freight.
North Adams.		6.00 AM	12.20 PM	3.20 PM	5.00 PM
Howlands.	3.36	6.07	12.27	3.27	5.45
Renfrew	0.95	6.10	12.30	3.30	5.26
Adams	1.02	6.14	12.34	**3.34**	**5.30** **5.48**
Maple Grove.	1.16	6.17	12.37	3.37	5.57

OHIO & MISSISSIPPI RY.

Freight Trains.

	THIRD CLASS.	
	No. 51. Ex. Sunday Through.	No. 19. Daily. St. Louis and New Orleans.
Cincinnati.	.....	.....
Storrs.	**7.30** P.M	5.30 P.M.
Sedamsville	.....	.....
Cullom's	7.47	6.05 / **6.15**
Delhi	8.01	6.53 / **7.03**
North Bend	8.15	7.18
Gravel Pit.	8.27 / **8.37**	7.32 / **7.42**
E. Law'burg	.....	.....
Lawr'ceb'g.	8.58	8.03

CHICAGO, BURLINGTON & QUINCY RAILROAD.

Burlington & Keokuk Branch. Time Table No. 58.

No. 171 First Class Passenger	Distance from Burlington	Distances between Stations	STATIONS.	Telegraph Stations	Capacity Sidings Cars	TOWARD BURLINGTON. No. 172 First Class Passenger	No. 174 First Class Passenger	No. 176 Third Class Freight	No. 178 Third Class Freight
Ex Sunday			Lv. Ar.			Daily	Ex Sunday	Ex Sunday	Daily
8.30 A M			**BURLINGTON**	N		5.25 A M	6.15 P M	4.35 P M	9.30 A M
8.55 M 178 P 175	11.02	5.08	**Wever**	D	48	4.58	5.50	3.50	8.55 M 175 & 171
9.10	18.92	7.90	**Ft. Madison**	N	152	4.40	5.33	3.15	8.25 M K C 3
9.25	25.34	1.53	**VIELE**	D	28	4.25	5.18	2.30 M 177	7.55

RAILROAD GAZETTE

Published Every Friday,
At 73 Broadway, New York.

EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

We have received too late for use in this issue, drawings of and notes on the new bridge which fell last week on the Norfolk & Western Railroad. The span which fell was not complete, the sway-bracing not having been put in. This fact, with defective material, seems to explain the accident.

The question of slack in freight train couplings was tested on a large scale on the Chicago, Burlington & Quincy lately. A closely coupled train of fifty freight cars was run from Burlington to Pacific Junction in order to thoroughly test the matter and ascertain whether there are any practical difficulties in working a heavy train without slack. It will be remembered that the tests on this question made at Burlington during the brake trials last July were deemed inconclusive by many persons, though the results certainly seemed to show that a somewhat heavier train could be started with tight than with slack couplings.

The new Official (freight) Classification of the Trunk Lines and Central Traffic Association, which goes into effect April 1, serves as a sort of foretaste of what the people in the traffic departments of the roads may expect for regular aliment hereafter. The pamphlet has 46 pages, 10 × 11 in., including 40 solidly filled with pica type, giving the list of articles. The present west-bound classification takes a few pages of a little handbook, about 3½ × 6 in., so that the prospective amelioration of the papermakers' obstacles to success in life are seen to be real and tangible. If they do not find the capacities of their mills taxed to the utmost it will not be the fault of the Inter-state Commerce act or its framers.

Comment on the practical value of this revision, which consolidates the four principal classifications heretofore in use east of Chicago and St. Louis, is, of course, impossible, as it covers an innumerable variety of details and represents several days' or weeks' careful work of a large committee; and, as Commissioner Fink says, it must be tried in actual practice before it can be judged. A hasty glance, however, shows a great many minor improvements, and reveals the hand of a careful and experienced compiler. The very best talent in the associations must have had a prominent share in the work. Errors will inevitably be found, of course, especially omissions where prominent articles should be enumerated under two or more different heads, but a few months' use will correct them. The valuable work done in sifting out worthless and conflicting provisions and bringing together here all the good features of the old tariffs is worthy of especial note, and it will be a great pity if local wranglings or the alleged "rights" of different sections of country or lines of trade interfere with or hinder the universal adoption of the new classification.

Those who have followed the news of new railroad projects which we publish from week to week must have been struck by the great number of companies that have been building lines in Georgia during the last year or so. Most of these companies have no affiliation with the companies which own the old Georgia railroads, and the names of very few of them are known in the New York or Boston money markets, to which the bonds of most new railroads usually come long before the roads are finished, and sometimes before they are fairly begun. They are the more noticeable because of late years by far the larger part of the new construction in other parts of the country has been done directly or indirectly by the old companies, which have credit, know by experience what traffic the country affords, and which often get a profit from the traffic which new lines bring to the old ones when the new ones do not pay of themselves.

After some inquiry we learn that most of these new Georgia roads are almost wholly local projects, the capital for which has been chiefly obtained at home. Most of them are short and generally very cheap, and will have few and light trains run at low speed—will be what the Germans call "secondary roads." Much of Georgia and other parts of the South is still far distant from any railroad station, the roads are bad, but the population and production are not sufficient to support an ordinary railroad. Whether they make a direct return on the capital invested or not the new lines will be very beneficial to many parts of Georgia, and probably increase the value of the adjacent lands much more than their cost. Some of them have issued bonds at the rate of not more than $6,000 or $8,000 per mile, but it is not safe to say without a special study of each case whether interest can be earned even on this small amount. Very likely, lines of this kind which shall have succeeded in earning interest on their small cost will some day be bought by some "syndicate," and then securities to twice the amount of their cost put on the market with a flourish of trumpets; and investors will do well then to have their wits about them.

It seems to be settled that the organization of the present pool commissioner's office in this city is to be maintained, as a bureau of statistics and a means of co-ordinating the action of the great trunk lines on matters of general policy. With the pooling feature of the organization abolished, it is questionable how far the roads can be held to act together, but they have learned the common need of such a centre as Mr. Fink's office; and indeed it is as necessary for the public as for the railroad companies. Uniformity and harmony in rates, classifications and policy are the very essence of the Inter-state Commerce law, or at least without them the law will be a mockery and an affliction to producers, consumers and carriers. But harmonious development of a common policy can only be secured through the great central organizations now established, or others like them.

In view of the steady decrease in the cost of moving freight, which has been going on, with no serious interruption, for 30 years, one can but feel apprehensive of a radical change in the machinery which the railroad companies have developed for adjusting their relations with each other and with the public. Mr. Atkinson put the figures in a striking way some weeks ago. By his statement the average cost of moving one ton a mile over the New York Central in 1855 was 3.270 cents; in 1885 it was 0.680 cent; or the average for four years, 1865–1868, both inclusive, was 3.0097 cents; and for four years, 1882–1885, was 0.7895 cent—a saving of 2.2202 cents. That is, a saving of 2¼ cents per ton-mile for the last of these two periods of four years would amount to nearly 4,000 million dollars on the freight traffic of that period. This, it must be borne in mind, was the saving in freight *charges* as paid by the shippers or consumers, and not in *cost* to the companies. The meaning of this to the mass of the people is that one day's wages of an average mechanic will move one year's supply of bread and meat for him 1,000 miles. In this respect he is some 2½ times as well off as his brother in England. For present purposes it is not necessary to seek absolute accuracy of figures, or to try to allot its proper share to each of the many influences which have concurred to bring about this result. The lesson is that the railroad companies have in the main been working in the right direction, and it is a mistake to look with suspicion on their organizations.

THE ENFORCEMENT OF THE INTER-STATE COMMERCE ACT.

We have already alluded to the discussion between General Alexander and Commissioner Fink, as to the strictness with which the railroads should interpret the requirements of the new law. Perhaps the difference in the practical position of these two men is no so great as might at first sight appear. It is not so much a question of the actual interpretation of the law as of the attitude which the railroads should take toward the legislative authority. Mr. Fink thinks that it is the duty of railroad managers to interpret the doubtful provisions in such a manner as to protect investors and shippers as far as they can. General Alexander, on the other hand, thinks that it is better to take the plain meaning of the law and live up to it, in spite of the temporary injury to business.

It is not possible to say off-hand which of these views is right, and which is wrong. There is an element of truth in both. If a strict construction of the law would do a great injury to business, which a slight exercise of discretion in interpreting the law would avoid, that is one thing. But if the injury involved is less serious, or the meaning of the law less elastic, the case is altered; and in these important instances we incline to the view of General Alexander, rather than to that of Mr. Fink. We believe that in the long run the safest way is to obey the law strictly, rather than to deal with it loosely.

There are several reasons for this. In the first place, the only way to get rid of obnoxious legislation is by making people see the hardship which it involves. If we give the law a fair trial, we know where we stand. If we attempt to evade it, or even to mitigate its worst consequences, we introduce an element of uncertainty, which makes people unwilling to change it. As long as the railroads tried to resist the Granger legislation, the laws were made stricter and stricter; it was only when they obeyed it that people saw how bad the laws were. They saw that it was ruinous for the public to attempt to legislate without regard for the railroad interests. Two years' operation of the Potter law in Wisconsin taught the community a lesson which could not have been learned in any other way. And, on the whole, it was probably more cheaply learned by two years of acute suffering than it would have been in ten years of vexatious conflict.

In the second place, if the roads attempt to avoid the evil consequences of the law, they bring the responsibility for every failure upon themselves, instead of upon the legislators. They thus incur odium; and this odium is likely to lead to the passage of more severe acts in the future. This is an important point. Nobody expects the Inter-state Commerce bill to be an unmixed success. Some people think that it is not strict enough. Others think that it is too strict. Now, if the railroads obey it just as fully as they can, any hardship which may result from it will be regarded as proof that it is too strict. But if the roads attempt to evade the obvious meaning of its provisions, people will say that it was not strict enough. They will throw upon the railroads the blame for every failure and every hardship in the operation of the act, if they are given a pretext for so doing. It is of the utmost importance that railroad men should give them no such pretext.

If a bad provision is thoroughly enforced, people see that the men who insisted upon the provision are to blame for whatever comes of it. If its enforcement is resisted, the people who resist it are blamed for two sets of evils; those which were due to the provision directly, and those which were due to its non-enforcement. It is the duty of railroad managers toward railroad investors to avoid incurring this blame.

It has been a surprise to many people that the railroads are honestly trying to obey the provisions of the act. They thought that there would be active resistance. They had heard so much about the wickedness of railroad monopolists, and the opposition between railroads and shippers, that they expected to see a fight. A popular writer on railroad questions, as has been said by one of his critics, "calls every one connected with the railroads 'them,' and other people 'us,' and insists that between 'them' and 'us' there can be no permanent relation but that of master and servant." This really represents the feeling of a great many people on the subject. They supposed that there would have to be a trial of strength between the state and the railroads to see which was master and which was servant. They find themselves mistaken, and, as a result of their acquiescence in the law, the railroads today stand more favorably before the public than they did two months ago, or than they have done for years past.

It is in the power of the railroad authorities still further to strengthen the advantage which they have won. If they show themselves desirous to enforce the plain meaning of the law, rather than to turn that meaning to their own advantage, the public will desire, and even insist, that the Commission shall grant them all possible relief. If they not merely acquiesce in the law as a whole, but give all its details as full and fair a trial as possible, we may be sure that the ones which hurt the railroads will be found to hurt the

public still more; and that there will be a really good chance of common action by all parties,—shippers, railroads and Commission—to have the obnoxious details modified. If, on the other hand, each party insists on interpreting it to suit himself, we shall be farther than ever from such common action. Each will think that any difficulties which may arise were due to the disregard of his pet section, and will insist on having the obnoxious provisions made stronger instead of weaker.

There are certain parts of the Inter-state Commerce bill which we strongly wish to see modified. But we believe that this result is likely to be most surely attained by obeying them, instead of resisting them; by construing them according to the apparent intent of the language, rather than by taking the interpretation into our own hands. We think the law as it stands good enough to furnish a sound basis for something better; and by far the best chance of getting something better in the future is by honestly obeying the provisions of the law, good and bad alike, for the present.

ANTHRACITE vs. BITUMINOUS COAL BURNING LOCOMOTIVES.

Anthracite burning engines are now being used on many roads, in order to avoid the dust and cinders produced by soft coal. The figures which we give on another page show, however, that this immunity may be purchased at a high price.

The use of an engine burning bituminous coal of a fair quality would enable a very important saving to be effected, as one engine would do the work of two. We are accustomed to pride ourselves upon the large amount of mileage made by an American locomotive and compare the figures with the smaller results achieved in England and elsewhere.

In this case, however, our English cousins have certainly the best of it. A daily run of 140 miles compares very badly with the performance of the Charles Dickens, 378 miles every day, or with the average daily work done by English express engines, seldom under 200 miles. The cause, however, of the small mileage reached on the Erie is very simple, the hard coal is so dirty that the fire requires complete renewal after a few hours work. If good soft coal were used, a double trip might easily be made with one set of men, and thus at one stroke one soft coal engine would do the work of two hard coal engines.

The great weight of the engine and tender appear to be almost wholly caused by the nature of the fuel, and are not rendered necessary by the weight of the train, or the speed at which it is run. As the grade is nearly level, nothing need be said on that score. The numerous stoppages do, however, greatly increase the work of the engine, and the effect of the extra work thrown upon a locomotive has been discussed at length in these columns,* and need not be further considered here. We propose considering the consumption of fuel rather than that of water. The adoption of good interlocked signals would, of course, diminish the consumption of both, but for the present we may consider the weight of the cars and the number of stoppages unchanged.

It seems worth while considering whether the same train could not be more cheaply handled by a lighter engine and tender, burning a good quality of bituminous coal. With skillful firing there can be little doubt of the result. The amount of water evaporated per pound of coal would then reach 8.5 lbs. reducing the average total weigh of coal burnt during a journey by 4,655 lbs. It is, however, only fair to assume that the total amount of coal with which the tender started on its trip might be reduced in the proportion of $\frac{4.83}{8.50}$ thus effecting a saving in weight of coal carried of no less than 7,081 lbs. This reduction in the load to be carried would render possible some reduction in the weight of the tender itself, and it is not too much to say that the substitution of bituminous for anthracite coal would render possible a reduction of 10,000 lbs. in the weight of the tender when loaded.

It may be doubted whether any bituminous coal burning express engine weighs as much as 114,000 lbs., and as many far lighter engines are running heavier trains at a higher speed over worse gradients, it is only fair to suppose that an engine weighing 96,000 lbs. could with skillful management and good coal do the work. This would imply a reduction of no less than 28,000 lbs. in the weight of the engine and tender, or about 6.5 per cent. reduction in the weight of the entire train. The gross tractive force and the consumption of water might therefore be reduced by that amount, and as the consumption of water would consequently be less, the amount of coal required to evaporate it would also be less.

*See page 872, *Railroad Gazette*, Dec. 17, 1886.

At present the consumption of water is 374 lbs. per mile, and a reduction of 6.5 per cent. would make the consumption only 350 lbs. of water per mile. If 8.5 lbs. were evaporated per pound of coal, the consumption of coal would be only a trifle more than 41 lbs. per mile instead of nearly 78 lbs.

This consumption, 41 lbs., might probably be still further reduced by enlarging the blast-pipe and diminishing the back pressure, as the quantity of partially consumed gases hurried through the flues being reduced, the intensity of the draft might be diminished.

The adoption of a compound engine under these circumstances would probably be found to effect a further economy, and it can hardly be disputed, that were the consumption of coal reduced to from 30 to 35 lbs. per mile, the nuisance from smoke and cinders would disappear entirely. Where immense quantities of fuel are imperfectly burnt on locomotives, the passengers will be annoyed by showers of hot sparks and columns of black smoke, but a reasonable quantity of coal, thoroughly burnt, will cause no annoyance.

The express trains on the Erie have to make frequent stoppages, and a great amount of power is consumed in getting up speed after each stoppage. The great economy of the compound engine lies in the fact that when getting away with a train an ordinary engine is working in full gear, and, consequently, almost without expansion, while a compound locomotive as generally proportioned is working with a threefold expansion. This is a very important point, and explains why compound engines have shown such a remarkable economy when working stopping trains. One of Mr. Webb's compounds, during one month's running, burnt only 23.3 pounds of coal per mile, against 32.1 pounds by a similar but non-compound engine working the same suburban passenger trains.

Many persons consider that a locomotive should be built with a view to do the work rather than to save coal. But in many cases a little attention to the question of fuel economy will enable a considerable reduction to be made in the weight of the engine and tender. This reduction means lessened first cost, and diminished strain and wear and tear on bridges and permanent way, important advantages which are often overlooked because they cannot be exactly measured.

FREE PASSES.

Notions of right and wrong on the subject of free passes have become so distorted that men who in all other relations of life are proud and honorable, humble themselves to beg passes and hardly suspect the humiliation. That a wealthy merchant could ask a poor widow to help pay his railroad fare from Boston to Florida seems hardly credible, and yet it happens every day. That a state legislature should try to confiscate property in railroad securities seems like outrageous tyranny; and yet it is done in this land of liberty, and with a cynical disregard of even decent appearance. Only the other day the Wisconsin Assembly passed a bill, by a vote of 49 to 33, requiring railroads to give annual passes to members of the Legislature, elective state officers and members of courts of record. A similar law has been in force in New Jersey for a number of years. Such a law might be constitutional by the terms of the charters of the companies, or it might be sustained by legal sophistries about taxation, or it may be argued that it is better to remove all taint of bribery by making passes compulsory. Nevertheless, it remains an unseemly thing to legislate another man's money into your own pocket. Much the best way to avoid appearance of bribery is to neither give nor take passes.

Congress has, perhaps unwittingly, given the railroad companies their opportunity, and we shall be disappointed if they do not take it. If they frankly announce that they will give no more passes, within or without state limits, unless compelled by law; and if they prove their impartiality and good faith, they will have an overwhelming public opinion with them. Courage and candor conquer all things; but the finest trickster is sure some day to meet a finer. The roads have juggled and temporized with this question for years, and they now see the result. Many people look upon them as lawful prey. The great body of American citizens are not fools. They can see through a ladder, and love fair play. Why not try them, and see what effect it would have upon business and legislation to simply treat all men alike.

A bundle of applications for passes has come into our hands, and they illustrate so well the foolish grounds on which passes are asked, the essential want of common business morals in many of the applicants, and the nuisance to officials of the whole practice, that we print a few of them. Names, dates and geography only are changed.

OSHKOSH, Feb. 24, 1883.

John Smith, Esq., Gen'l Supt. Maine & Oregon R.R.:

DEAR SIR: We are Publishing a Railway Guide to this City, Giving full Time Tables of your Road and Branches and putting them first in the Book a copy of which we mail you. We would like a Pass over your Road In consideration of Same, for W. J. Morton.

We have had an offer from Duluth Central of a Pass if we will put their Time Table in front part of the "Guide" and cut yours down one half and put it in the back part, which we very much dislike to do, but self interest will *compel* us to do so if you cannot comply with above request. Trusting we will not be compelled to change your Time Tables we are

Yours very truly
W. J. MORTON & Co.

This modest request was refused, and on inquiry of the Duluth Central it was found that no correspondence whatever had taken place with Morton & Co., and no proposition of any sort had been made or received.

Another blackmailer is the Chief Engineer of the Fire Department of the Western city of Seven-Up. He declines a trip pass which has been offered and wants an annual. He hints that once he might have shipped horses over about five miles of the Maine & Oregon. He adds:

"I also obiged your road in diffrant ways—for Instance, your road built a large freight house in the Heart of our Fire Limits, and could of stoped its erection as I have that power, but allowed it to Go on. So I do not consider it any compliement for any rail road for a pass."

The record does not show whether or not he got his "annual."

The next one, however, has the simple directness of the business man who knows his ground and gets what he goes for.

State of Ohio, Hall of Representatives,
Columbus, Ohio, Jan. 22, 1883.

Mr W Root

Sir Being a member of the preasant Legislature and living near the northing Exstension of the Road of Which your its Attorney a Pass over said Road would be vary acceptable.

JAMES W. SIMPSON
Rep for the 3 Dist
of Jefferson Co

Pass granted.

Army officers and ministers of the gospel have been great sinners in pass-begging, and much to their own moral harm; but it is to be hoped that the following batch of letters are exceptional.

QUARTERMASTER'S OFFICE,
FORT MAHONY, Arkansas, March 21, 1883.

John Smith, Esq., Gen'l Supt. M. & O. R. R., etc., etc.:

DEAR SIR: As I expect to make a trip east on *unofficial business* some time during the approaching summer, you will place me under many obligations by furnishing me with a *trip pass and return* for myself and wife, from Little Rock to Pittsburgh. Should it be in my power at any time to reciprocate the favor in any manner, I assure you it will afford me great pleasure to do so. Very respectfully, etc.,

U. S. TOMPKINS, Col. U. S. Army.

The officer of the railroad to whom this application was referred said: "When we are sure *Quartermasters* are giving us business it is sometimes policy to give a pass. In this case I do not see policy or good cause." Probably he had found the facts, easily obtainable, that this applicant was a major and brevet-colonel, and had nothing whatever to do with the Quartermaster's office at Fort Mahony. The little trick did not work, although it may have been justified in the eyes of the officer on the principle that justified the Israelites in spoiling the Egyptians.

The following is on a printed letter head of a Missionary Union, giving statistics of the whole number baptized, stations, preachers, etc.:

MARCH 17, 1883.

JOHN SMITH, ESQ., etc., etc.:

MY DEAR SIR: Will you favor the cause of missions by granting me a clergyman's Ticket on your Road unless you feel inclined to favor me as many other Roads are doing by extending a complimentary free pass. I travel only as a gospel minister—holding missionary conventions and looking after the interests of churches. I am also correspondent of the Press and endeavor to give an equivalent for free passes in Paper currency. Yours, etc., C. F. OSMAN.

With this application is inclosed a specimen of the "paper currency" used by the divine. It is a newspaper slip, from which we quote:

"At the evening meeting standing room could hardly be found * * Bro. Gough was weary * * but his soul kindled over the people he had recently left, and his account led his hearers to marvel at the results granted by our wonder-working God.

Hurrying to the train a comfortable berth in Pullman's Palace Car furnished rest for our weary bodies. The smooth track of the Jimtown and Niagara Railroad and flying Pacific train rather courted sleep. By the way, this is one of the best roads and most popular routes to the Pacific."

And so on for about six inches of free "reading notices" of the road and its officers, mixed with revivals and missionary meetings. This seems to be a favorite method with the cloth, as several letters with similar enclosures are found in this interesting collection. One

poor minister, however, is not so fertile. He simply presents the claims of his calling thus:

Crossroads Maine Jan 23th 83

Mr John smith Superintender of the Maine & Oregon Rail road

SIR My appoint Ment is at —— and —— and —— Will you pleas to Send Me a half far pass for this year

and May the blesens of God attend your labers

E. SLANGWHANGER
Minister

A city missionary asks a pass for a lady who has suffered for years with spinal disease, and has heard of "The National Surgical Institute" somewhere in the West. The vigilant superintendent did what he could to keep the poor woman out of the hands of quacks.

These are but a few specimens of many similar letters filed within a period of three months. The records of every great railroad could supply reams of similar reading.

One of the arguments in favor of a reform of the Civil Service is the appalling waste of the time and energy made necessary by the spoils-of-war method of selection of appointed officers. It would be worth while to abolish the whole free pass system simply to save the labor of considering the mass of trash which now comes before the executive officers of a railroad company.

Freighting Stations and Freight-Houses

In a recent article upon Signals at Crossings, we called attention to the general legal obligation of railroad companies, in constructing their roads, to respect the public right to use crossings at highways for their teams, and to lay tracks across such crossings in such manner as will leave them safe for passenger trains and for passengers. That the company must construct safe crossings is matter of course. Nothing need be said in a railroad charter to create this obligation; it is understood that the railroad company accepts its grant upon an implied obligation not to destroy the use of the highway. One might easily suppose that a similar obligation exists requiring the construction of passenger stations and freight depots, but such is not the case. If the Legislature will have any particular company erect any specific class of depots or stations, it should say so in the charter, otherwise the company is free in that respect. The theory of the law is that the company takes the privilege of carrying goods and passengers in its trains across the highways upon the condition not to prevent the public from using the highways; but with respect to its pleasing its customers by making them comfortable in spacious and convenient depots or keeping their merchandise in sheltered and well-appointed stations, the conduct of the business is left to such bargain as the company and its customers may make or such liabilities as the company may incur by neglect, unless the Legislature, when preparing the charter, inserts some positive regulations. Thus, recently, at the village of Hamburg, N. Y., a complaint arose that the railroad running through that place was destitute of any adequate depot building either for freight or passengers, although both the freight and the passenger business at that place was very large. These complaints increased until at length they were brought before the Railroad Commissioners, who examined into the circumstances, and decided without hesitation that the existing buildings were inadequate, that the complaints of the public were well founded, and that the railroad company ought to construct a suitable building for the business of the place. The directors, however, decided that the interests of the company required them to postpone these improvements for the present. The complainants then applied to the courts to compel the company to do as the Commissioners ordered; but the Court of Appeals has now decided that the courts have no power to compel obedience. The judges say in effect that if passengers suffer injury or merchandise is spoiled the company will be liable for the lack of suitable buildings; but if it chooses to run that risk, or the risk of a falling off of business owing to the popular disapproval of its poor arrangements, it has the right to use its own judgment and follow its own interests, unless the charter specifies what buildings it shall provide. The duty to the public is to carry goods and passengers punctually and safely. The company is the judge what buildings shall be furnished for the purpose.

As to obeying the Railroad Commissioners, the decision is that these Commissioners have only power to investigate and recommend. They have full power to investigate with reference to the accommodation as well as to the security of the public, and if they find station buildings inconvenient, inadequate, or unsafe, they have power to notify the corporation what improvements are necessary, and to complain to the Attorney-General and to the Legislature, if they are not promptly made. Even if the company takes the position "The accommodations we furnish are not sufficient, they are not suitable, the omission to furnish different and better entails injury upon the public, but we will give no better, nor make alterations until we choose," the Railroad Commissioners are powerless, and so are the courts. The public gains nothing from the determination of the Commissioners until the Legislature sees fit to take up the case, and to enact a new law.

In this particular case the charter did say something to the effect that the company should have power to erect station houses and freight depots, but did not say in so many words that the company *must* do these things, therefore the Court held it was at liberty to follow its own interests.

In a recent case in Camden, Penn., the general public complained that the station accommodations were too extensive. The railroad running through that place used a large amount of space for the purposes of its depot, greatly encroaching on the city streets; and the business of the road at Camden involved the arrival of heavily-loaded trains very frequently, the running of loaded cars upon a complex system of side-tracks, great noise and confusion in unloading cars and in shifting their loads, a great proportion of which was composed of cows, calves, sheep and pigs, whose bleating and bellowing, united with the noise of bells and whistles, constituted what the neighbors declared was a "perfect nuisance." Finally one of the near residents besought the Court to restrain the use of so extensive depot buildings and arrangements, and the Court did so, saying that no individual or corporation has the right to unreasonably interfere with the peace, comfort and enjoyment of the ordinary citizen's occupancy of his land. The company can acquire the ownership of land and use it with a good deal of freedom, but it cannot, as its business increases, gradually engross more and more of the adjoining roadways and convert them from their original character of public highways to stations, depots and even yards engrossed by railroad business.

In this particular case the company had license from the city to lay its side-tracks and switches and to store its cars and merchandise in some of the public streets which it was occupying, but the Court said that the city could not give it lawful permission to use the land confided to it for the public use in such way as to constitute a nuisance to residents in the general neighborhood.

The Missouri Pacific System.

The Missouri Pacific Railroad was incorporated Oct. 21, 1876, being the successor of the Pacific Railroad, which was chartered March 12, 1849, to build a road from St. Louis to Jefferson City and onward to the boundary of the state of Missouri. From this, which at the present day would be called a small undertaking, but which at that time seemed a great one, has been built up the present grand system, which, starting at St. Louis, radiates through the vast areas covered by the states of Missouri, Kansas, Nebraska, Arkansas and the Indian Territory, embracing in it the Missouri Pacific proper; the St. Louis, Iron Mountain & Southern; the Missouri, Kansas & Texas; the International & Great Northern; the Galveston, Houston & Henderson; the Central Branch of the Union Pacific, and the Sedalia, Warsaw & Southern railroads, whose united length is 4,667 miles.

The Missouri Pacific proper has assets amounting to $78,467,572.27 and liabilities as follows: Capital stock, $39,959,600; funded debt, $30,000,000; other debts, $4,008,779.24, leaving a credit to income account of $4,499,193.03.

The St. Louis, Iron Mountain & Southern Railway has $62,861,393.17 of assets, against which stand: Capital stock, $22,083,195; funded debt, $35,540,482.81; other debts, $1,462,627.25, leaving a surplus of $3,775,088.11.

The Missouri, Kansas & Texas Railway has: Capital stock $46,414,676.45; funded debt, $44,574,534.66; other liabilities, $2,144,938.02; total, $93,134,149.13. The assets are $89,333,747.79, thus showing a deficit of $3,800,401.34.

The International & Great Northern Railroad has assets amounting to $28,621,256.99, and capital stock, $9,755,000; funded debt, $15,008,000; other liabilities, $299,740.90, leaving a surplus of $3,558,516.09.

The Galveston, Houston & Henderson Railroad capital stock is $1,000,000; funded debt, $2,000,000; other liabilities, $106,531.15; total, $3,106,531.15; assets, $3,059,624.44; deficit, $46,906.71.

The St. Louis, Fort Scott & Wichita Railroad has capital stock $6,614,885.55; funded debt, $5,498,000; other debts, $675,615; total, $12,788,500.55, and assets amounting to $12,331,728.38, thus leaving a debit to income or deficit of $456,772.17.

The increase in the average mileage operated was only 0.9 of one per cent. The increase in the freight earnings was 6.3 per cent., while the increase in the traffic (tons carried one mile) was 15.2 per cent. This discrepancy is accounted for by a decrease in the average rate per ton per mile, which in 1885 was 1.38 cents, and in 1886, 1.28 cents. The passenger earnings increased 0.8 of one per cent., while the passengers carried one mile increased 3.2 per cent. This difference was caused by the average distance each passenger was carried decreasing from 49.51 miles to 47.89 miles, and the average rate per passenger per mile from 2.58 cents to 2.51 cents. The mail earnings increased 11 per cent., which, no doubt, is caused by the increasing wants of a prosperous people.

The increase in the total earnings of 4.6 per cent. as against an increase in the length of the road of only one per cent., and notwithstanding a strike on the line, which substantially stopped all traffic from March 6 to March 29, 1886, whereby the gross earnings were decreased $902,156.13, as compared with the same month in 1885, is a cause of congratulation.

The operating expenses increased 5.9 per cent., but the locomotive mileage increased 1,680,254 miles, or 8.25 per cent.; the passenger train mileage 487,883 miles, or 8.22 per cent.; the passenger car mileage 2,640,447 miles, or 9.4 per cent.; the freight trains 1,066,844 miles, or 10.6 per cent., and the freight cars 14,781,833 miles, or 7.2 per cent. So that, in view of these increased per cents in mileage of rolling stock being so much greater than that in operating expenses, it follows that unusual economy has been exercised by the management.

There was a decrease of 55,425 tons in live stock; in grain and flour of 61,428 tons, and an increase in coal of 208,284 tons, and in iron ore of 159,896 tons. There was charged to operating expenses on account of betterments and extraordinary matters during the year the sum of $503,477.10. The average distance each ton of freight is carried (257 miles) and the average distance each passenger is hauled (48 miles), supplemented by an average rate per ton per mile of 1.28 cents, and an average rate per passenger mile of 2.51 cents, are all that could be desired under existing circumstances. The amount expended for equipment during the year was $3,269,815, which now consists of 706 locomotives, 561 passenger, mail, baggage, express and sleeping cars, and 22,487 freight cars.

Considering the vast and fertile section of the country which this system drains, and the great advances being made in population and wealth along its lines, its earning capacity must increase rapidly in the near future.

The Chicago, Burlington & Quincy.

The Chicago, Burlington & Quincy Railroad in its marvelous growth and expansion presses forward hand in hand with the progress of the great West; in fact leading the way into the thickly settled sections of Nebraska, Kansas and Colorado, at the present time, with the same determination as it did in the past into Illinois, Iowa, Wisconsin and Minnesota. Its managers have entire faith in the future settlement of the land contiguous to its lines, sowing with an open hand and reaping a bountiful harvest as the result of their faith and judgment.

The road was organized July 9, 1856, by the consolidation of the Chicago & Aurora and the Central Military Tract Railroad. In 1860 it extended its line to Quincy, Ill., and in 1862 to Burlington, Ia.

Through its acquisition of the Burlington & Missouri Railroad of Iowa, 1875, and the Burlington & Missouri Railroad of Nebraska in 1880, it obtained its valuable land grants.

In 1870 the number of miles operated was 532; in 1875, 1,268; in 1880, 1,857; in 1885, 3,646, and in 1886, 4,036 miles; nearly eight times greater than in 1870. From being a local road in the western vicinity of Chicago in 1856, it has stretched out to St. Paul in the Northwest, to St. Louis in the South, and in the West through Kansas City and Omaha to Denver on the one hand, and to the borders of Wyoming on the other, with innumerable branches and loops, enabling it to obtain the traffic for hundreds of miles on each side of its main line.

In 1871 its gross earnings were $7,207,685; in 1881, $21,176,456, or three times as much, and in 1886, $26,728,408, being nearly four times as much as in 1871.

The dividends paid in 1871 were $1,659,055, and in 1886 $6,110,722; and the excess of assets over liabilities now aggregates the enormous sum of thirty-seven million dollars. To have paid dividends continuously and to have laid up this sum from surplus income besides indicates a remarkable earning capacity, which is duly appreciated by the investing public, who purchase its stock freely at $139 per share.

The miles of road operated during the year 1886 increased 390, and $7,428,510 were expended on construction.

The results of operation for the year are about the same as in 1885, the increase in net earnings being only $85,916, and in gross $171,983—while the increase in length of road was 390 miles. The latter, however, was only operated a part of the year, and constructed in a new country in advance of settlement, following up that policy which has been so remunerative in the past.

The percentage of operating expenses to earnings is 54.2, the same as last year.

We cannot give the passenger and freight movement, with their dependent statistics, as the full report has not yet reached us, but an advance abstract will be found on another page of this issue.

Engines for New South Wales.

Engineering states that some important changes have been made in the method of payment for the 44 locomotives for which tenders have been recently invited here and in England. The engines are to be inspected and paid for in the Colony instead of at the place of manufacture, as at first announced, and the maker is to provide his own workshop for erection in the Colony. The engines are also to be constructed in every particular according to drawings, to which the contractor has not yet had access. It would appear that

these stipulations are intended to militate against makers at a distance and in favor of the Colonial firms of engineers who occasionally build locomotives. It is rather hard that a foreign maker should not only have to wait for any portion of his money until the engines are erected and in steam at a point 12,000 miles away, but that even then he should have to provide any workshops and appliances necessary to effect alterations in order to insure an acceptance of his engines.

February Accidents.

Our record of train accidents in February, given in this number, includes 57 collisions, 67 derailments and 8 other accidents; a total of 132 accidents, in which 55 persons were killed and 106 injured.

These accidents are classified as follows:

COLLISIONS:		
Rear	34	
Butting	31	
Crossing	2	
		— 57
DERAILMENTS:		
Broken rail	9	
Loose or spread rail	2	
Broken bridge or trestle	4	
Broken switch	2	
Broken frog	1	
Broken wheel	4	
Broken axle	5	
Broken truck	1	
Broken parallel rod	1	
Overload d car	1	
Cattle on track	3	
Snow	3	
Washout	1	
Land slide	5	
Accidental obstruction	2	
Malicious obstruction	5	
Wind	17	
Unexplained		— 67
OTHER ACCIDENTS:		
Boiler explosion	1	
Broken parallel rod	1	
Broken axle	1	
Miscellaneous	5	
		— 8
Total number of accidents		132

The causes of collisions where given were as follows:

Trains breaking in two	3
Misplaced switch	4
Failure to give or observe signal	4
Mistake in giving or understanding orders	3
Miscellaneous	9
Maliciousness	1
Unexplained	33
Total	57

A general classification shows:

	Collisions.	Derailments.	Other.	Total.	P. c.
Defects of road	..	18	..	18	14
Defects of equipment	..	11	4	15	11
Negligence in operating	23	1	..	24	18
Unforeseen obstructions	..	18	..	18	14
Maliciously caused	1	2	..	3	2
Miscellaneous	..	..	4	4	3
Unexplained	33	17	..	50	38
Total	57	67	8	132	100

The number of trains involved (not the number of accidents) is as follows:

	Collisions.	Derailments.	Other.	Total.	P.c
Passenger	21	26	7	54	30
Freight and other	83	41	1	125	70
Total	104	67	8	179	100

The casualties may be divided as follows:

KILLED:	Collisions.	Derailments.	Other.	Total.	P.c.
Employés	6	13	2	21	38
Passengers	..	30	..	30	54
Trespassers	1	3	..	4	8
Total	7	46	2	55	100
INJURED:					
Employés	26	25	..	51	48
Passengers	2	47	..	49	46
Trespassers	6	..	..	6	6
Total	34	72	..	103	100

Nineteen accidents caused the death of one or more persons each, and 23 caused injury, but not death, leaving 90—68 per cent. of the whole—in which the injuries were so slight that the reporters did not take the trouble to count the victims.

The comparison with February, 1886, shows:

	1887.	1886.	Inc. or Dec.
Rear collisions	24	21	I. 3
Butting "	31	7	I. 24
Crossing "	2	4	D. 2
Derailments	67	61	I. 6
Other accidents	8	5	I. 3
Employés killed	21	19	I. 2
Others "	34	2	I. 32
Employés injured	51	58	D. 7
Others "	55	99	D. 44
Pass. trains involved in accidents	54	41	I. 13
Average per day:			
Accidents	4.71	3.50	
Killed	1.96	0.75	
Injured	5.78	5.61	
Average per accident:			
Killed	0.417	0.214	
Injured	0.803	1.602	

As compared with the previous month there is nothing of especial note except the large increase in butting collisions, and the startling increase of 70 per cent. in passengers killed, which is accounted for by the Vermont horror, which was really so much worse than that at Republic that it almost puts the latter in the shade. The increase over February, 1886, is in several items so great that the figures showing the the per cent. of increase are absurd, and we omit them. The butting collisions and fatalities to passengers are so widely different for the two months that they give either a very startling lesson or else none at all, so we will leave the percentages to be shown after a longer period has elapsed. We already have the dread certainty that March will follow its two predecessors of 1887 with a horrible death record; and some of the evidence brought out at the Forest Hills investigation leads one to tremble as he asks himself whether April and May will not continue the record of the year in the same way that it has begun and thus far run.

A perusal of the accident items themselves is instructive and should not be omitted merely because it is tiresome or hackneyed. Even to one who has already read accounts of the principal cases the grouping of the mass together is not uninstructive. There are many serious and fatal accidents in the newer and sparsely settled parts of the country, concerning which the facts are probably very poorly reported, not to say suppressed, as has been charged concerning some of those reported in this list; and eastern stockholders in these far-off roads may possibly have a duty in the premises.

Snow has been plentiful and in one case did serious injury in spite of the sheds put up to keep it off.

From an analysis of the total business of the Austro-Hungarian roads for 1884, we get the following statistics of accidents: Derailments, 471; collisions, 154; other accidents, 958; total, 1,583. The distribution of casualties was:

	Killed.	Wounded.
Passengers	6	52
Employés	94	347
Other persons	64	84

The total line worked was 13,200 miles; passengers carried one mile about 1,541,624,000, and tons carried one mile about 4,074,000,000.

The Florida Railroads.

I.

When we think of Florida most of us have in mind only the long peninsula which projects from the southeast corner of the United States between the Atlantic Ocean and the Gulf of Mexico. But, in fact, the peninsula proper has but little more area and probably not as much inhabitable land as what we may call the continental part of Florida. Indeed, the length of the state from east to west is as great as from north to south. The most southerly point reached by rail (Punta Gorda, on Charlotte Harbor) is but 250 miles south of the Georgia line, while from the Atlantic on the east at the mouth of the St. John River to the western border just beyond Pensacola, the whole length of which is traversed by a railroad line, is 370 miles.

There is, however, a reason for this limitation of "Florida," in the ordinary mind, to the peninsula. That which distinguishes Florida from the rest of the South is peculiar to the peninsula. The continental part of the State, that north of the railroad from Jacksonville to the Suwannee, and on both sides further west, is a cotton-growing country slightly different from South Georgia and Alabama in climate, appearance and productions; it is the peninsula which is the home of the orange and the other semi-tropical fruits.

This distinction profoundly affects the development of the railroad system of the state. A cotton-growing country does not require many railroads. The weight of the product per acre is small, and this is especially the case with sea-island cotton, which forms a considerable part of the Florida crop. Moreover, in most cotton-growing countries—and this is especially the case with Florida—only a small part of the area is cultivated, towns are few and very small; and with 20 or 30 miles of country on each side depending on it for transportation, a railroad often gets a very thin traffic. The history of the line from Jacksonville to Chattahoochee, of what is now the Florida Railway & Navigation Co., of the Atlantic & Gulf (now Savannah, Florida & Western), and of the new Pensacola & Atlantic line of the Louisville & Nashville, shows this very plainly. They have, or long had, plenty of territory, and for local traffic not much competition, but a painfully light traffic.

On the other hand, the products of the peninsula, oranges and early garden vegetables, are of the kind for which quick transportation near at hand is an indispensable condition of success. A mature orange grove in full bearing (as yet there are but few groves of large trees) is expected to produce about 25,000 lbs. of fruit per acre—150 times as much as an average crop of cotton. To haul such a weight 20 miles over the loose sand roads of Florida is impracticable. With garden vegetables much the same is true; a great weight is produced, which must be carried to market very quickly, or it becomes valueless.

Thus in some of those parts of the peninsula favorable for the production of oranges and early vegetables, railroads have already been built only a few miles apart, and many similar lines are in progress or projected. Very few are willing to attempt such industries more than five miles from a railroad or navigable water. And of course, if the whole or a very large part of the country on a railroad was occupied with producing groves or truck farms, it might have a heavy traffic in spite of a parallel line near by.

Another "efficient cause" of railroad construction in the peninsula is the swarm of winter visitors from the North. The same causes which make the products of the peninsula peculiar make its climate peculiar—the warm water of the Gulf Stream near the east coast and the hot water of the Gulf itself on the west coast making it very much more mild and equable than near by on the continent. This draws to it thousands of people, invalids and others, who desire to escape the cold further north. It is about equally distant from New York and Chicago—a 30 hours' journey—and nearer to most of the population between—much nearer to the Ohio Valley—and it receives many visitors from Southern states, from Virginia, the Carolinas, Kentucky, Tennessee and North Georgia. There is some beautiful scenery, more which is attractive by its strangeness, and healthy people find a winter sojourn very pleasant, not to speak of invalids who can hardly live in a Northern winter. The result of this (aided in many cases by real estate speculations) has been the establishment of great numbers of winter resort hotels, often very large and sometimes very excellent, not only in the larger towns, but in remote corners of the state. The tourist travel and the supplies for it have contributed materially toward the support of the Florida railroads, and have been counted on to help support some of the projected lines.

Until quite recently it might be said that the *peninsula* had no railroads. Before the war a line (built by two companies) had been completed from Jacksonville west to within 20 miles of the Appalachicola River, and another from Fernandina southwest to Cedar Keys. The latter was mostly in the peninsula, but not until long after the war was there on it any production worth mentioning of the oranges and vegetables which are now peculiarly the peninsula products Shortly after the war a wooden railroad was built from St Augustine west to the St. John River, about 13 miles, to give access to that quaint old Spanish town. But the peninsula south of the "Transit Railroad," where now nearly all the oranges and most of the hotels are situated, was virtually without railroad transportation and long remained so. One might suppose that the long coast line would have given an outlet by sea to a considerable part of the country; but the sea really was scarcely available at all to the grower of oranges and vegetables. On the Atlantic coast there is but one harbor (St. Augustine) worth mentioning south of Fernandina, which is at the extreme north of the state, and St Augustine is a poor harbor. Worse than that, the land near the sea is generally not worth cultivating until we reach the Indian River, much further south. On the Gulf coast there are more and better harbors, and more cultivable land; but vessels on the Gulf would have to make a long circuit to reach the markets for Florida products. The chief outlet for the peninsula before the railroads were built was the St. John River, running north generally, not more than 25 miles from the sea, navigable about 200 miles as it runs and 125 in a straight line. On or near the river is much cultivable land, and this part of the peninsula was the first to be developed. In 1868, little steamboats forced their way up the Ocklamaha, a tributary of the St. John, and into two considerable lakes at its head, which are surrounded by some of the most fertile land in the state.

Nevertheless, many times as much of the land most favorable for oranges, etc., remained inaccessible to such transportation as the rivers afforded. Why, it may be asked, were not railroads built to secure the traffic which might become so large? One reason was that the land favorable for cultivation does not lie in great bodies like the Western prairies, but is usually in small bodies scattered over vast areas which are almost worthless for cultivation. In the next place, orange-growing, the great industry of the Florida peninsula, affords no product for several years after the land is cleared and planted. We may be sure that if it took seven years of cultivation before the first crop could be produced in Dakota, there would be very few railroads there. More than in almost any other part of the country something besides the traffic in prospect was required in order to induce capital to build railroads—something to pay interest on cost during the weary years between the planting of trees and the production of oranges.

An attempt to provide for this was made before the war by land grants. The state then provided for a rationally planned railroad system, consisting of a line across the upper part of the state, from Jacksonville west to Pensacola, of the line from the northeast corner of the state at Fernandina southwest to the Gulf at Cedar Keys, and of a line diverging from the latter about midway and extending down the middle of the peninsula to the south. About half of the line between Jacksonville and Pensacola and the whole of that between Fernandina and Cedar Keys were completed before the war, but when after the war it was desired to make the land available for further construction, an obstacle was met with. In the course of the various financial arrangements in connection with the completed part of the railroads, the state had issued its own bonds, secured by all the lands granted to it, including the "swamp and overflowed lands," which formed a very large part of the area of the state. The courts decided that these bondholders had a lien on these lands, and therefore no grant of them could be made. The state could not or would not pay off the bonds, and the immense area, nominally at its disposal, was therefore entirely unavailable. It was about 1879 that a way out of this difficulty was found. The Governor then sold to Hamilton Disston, of Philadelphia, 4,000,000 acres of the state lands for $1,000,000 in cash, with which he paid the bond holders' claims, and thus the remaining lands again became available. Moreover, the purchaser immediately set about advertising the attractions of Florida to settlers in order to make a market for his lands, and this at once made a market for other Florida lands and greatly improved the prospects for railroad traffic.

The result of this was such an immigration into Florida as has seldom occurred in so old a state. New railroads were undertaken, aided by grants of the land which had been made available, and for a state of its population a very considerable mileage has been constructed. The value of land in the state increased immensely, a great number of towns sprung up in what had been a wilderness and large amounts of capital were invested, not only in land, but in industrial enterprises, especially orange groves, which, before they become productive, absorb large amounts of money. Thus the Florida of to-day may almost be said to date from 1879, when the new era of railroad construction began, which alone has made much of the state available.

As is usual with new countries, the period of great growth and business prosperity has been followed by dullness. In the case of Florida there is more than the usual occasion for such a change. In the settlement of every new country, the expenditures during the settlement are much larger than immediately afterwards. The settler must buy materials for

buildings and fences, teams, tools, implements, and all his family supplies. This makes business very active with all dealers and mechanics. But after the first year he buys little except the most necessary supplies. In a grain and stock growing country, even these necessary supplies are much less after the first year, because the farmer produces himself the bulk of his food. In a country like Florida he is always a buyer of food; but there when he first came one of his most considerable expenditures was usually for land and the clearing of land; for the land desirable for orange groves and truck farms was not to be had for the taking, or a few dollars an acre, ready for the plow, but was largely sold uncleared for $20 to $150 an acre, and then cost $30 to $100 an acre for clearing. Thus the land owners of Florida for five or six years were receiving in the aggregate an enormous income from land sales, and this had a very great effect on the prosperity of the state. As usual, under such circumstances, there were a rapid growth of population and a very active trade. There was a great activity in real estate speculation and in town lots, hundreds of embryo cities being started on paper if not otherwise, and the influx of speculators who did not intend to live on the land they bought had no little effect on the prosperity of the state, especially on that of the railroads, steamboats and hotels.

The real estate speculation is now mostly at an end, much as it comes to an end in every new country after its first rapid growth, but in Florida, assisted by the cold weather of January, 1886, which destroyed nearly all the fruit on the trees in the state, and a large part of that year's growth of wood, calling sharply to mind the great freeze of 1835, which absolutely killed nearly every orange tree in the state. This cessation or great reduction of the sales of land, and of the influx of setlers and land-buyers, has had a very depressing effect on trade; but meanwhile, the seed which has been planted during the past years will certainly have its effect. So far the products of the Florida peninsula and the income from them have been insignificant in proportion to the area cultivated or the expenditure in cultivation. Vastly more has gone into the ground than has come out of it. But it is evident to the casual observer who travels about the state that if no disaster happens to the groves, five or six years later ten times as many oranges will be produced as are produced now, simply because only a small fraction of the healthy trees are in bearing yet. The number will increase yearly, while, at the same time, the trees now in bearing, which are nearly all young, will increase in productiveness. Thus it is not necessary for immigration to increase in order to increase the annual production. Nothing can prevent that except some disaster like the frost of 1835, or the actual abandonment of the land now cultivated.

It is stated that in the early days of the "Western" (Boston & Albany) Railroad, days when hemlock was still used in bridges, the directors set out on an annual tour of inspection, accompanied by the then slightly veteran Howe, the patentee of the bridges in use on the road.

For the purpose of inspecting one of the bridges the party had gone under it, and one of the directors, armed with a heavy cane, commenced punching at the timbers of the bottom chord. A slight amount of violence sufficed to puncture a thin glaze of sound wood and bring down a shower of rotten hemlock.

With considerable interest, not to say excitement, the director exclaimed: "Look at that, gentlemen! Great God, look at that!! What holds that bridge up!!!"

Exceeding plenty in the forward end of the directors' car had not destroyed the great bridge builder's business instincts if it had interfered with the clearness of his enunciation and he replied: "What holds that br-bridge up? Why the pr-principle of that bridge holds it up."

May be this devotion to principle is hereditary on Massachusetts railroads.

NEW PUBLICATIONS.

Florida Official Path-Finder.—This guide book, first published last winter, assumes to be a "complete guide to all points in Florida," and to give the routes and times of all railroad, steamboat and stage lines throughout the state. Something of the kind was very much needed. Florida, in winter, is overrun with tourists, who penetrate into almost every accessible corner, and make temporary homes there, and for this they need much more detailed information than it is practicable to give in any general railroad guide. They need especially to have *all* the stations given, and the Florida railroads often have stations every two or three miles. Then Florida has many steamboat lines, boats plying not only on the St. John and the Ocklamaha, which are familiar to untraveled Americans even, but also on the Chattahoochee and Apalachicola, the Kissimmee, the Suwannee, the Halifax, the Indian River, the Manatee, and on several interior lakes and the Sante Fe Canal, besides several coasting steamers. Many of these have very short routes, but they are, nevertheless, of great importance to some of the visitors to the state. There are also very many stage lines. Hotels, some of them very large, are hidden in all sorts of out-of-the-way nooks, and so there is unusual need of something to show the way.

The *Florida Path-Finder* fills this need fairly well. It gives the information fully and clearly, and so far as we have been able to test it, accurately. It might be made much easier to consult, and a classification and systematic presentation of the advertisements, which (especially the hotel advertisements), are among its most valuable contents, would very greatly improve it. A large scale map, the same that is printed on a folder of the Florida Railway & Navigation Co., adds greatly to its usefulness.

The Florida Railway & Navigation Co. has published, to advertise its line, a folder and a descriptive book which differ from many things of the kind by being very useful to the tourist, from whom it obtains a very large part of its passenger earnings during the winter months. The noticeable feature of the folder is a large-scale indexed map of Florida and the southern part of Georgia, 17 x 32 in., which bears this truthful statement: "This map is geographically correct, and shows all information attainable up to November, 1886." It gives all the completed railroad lines, those of the Florida Railway & Navigation Co. being distinguished by a heavier line than is used for the others, which, nevertheless, are perfectly distinct, and have, substantially, all of their very numerous stations indicated. The innumerable interior lakes are indicated, and altogether the map is quite clear and that it is valued by travelers is evident from the fact that they are found examining it on all railroads and in all part of the state.

The book mentioned is a guide-book, describing all the stations and all the lines of the company in their order. The descriptions are brief, and usually give some account of the chief industries of the place and of anything notable connected with it. It can be read as one passes over the road, and very greatly adds to the interest of the journey, causing the traveler to look out for, see and remember many things which otherwise would escape his notice entirely. But for it probably not one traveler in a thousand would know as he approaches Tallahassee from the east that he is passing through the great estate given by the nation to Lafayette. Even notable natural objects in the vicinity, but out of sight, become interesting when we pass near them and learn of their existence. The book is handsomely printed and well illustrated, and does a good deal towards making the passenger pleased with his journey.

Revue Général des Machines-Outils, etc.

We have received the first two numbers of a new monthly published in Paris under this title. The scope of this publication is to collect new designs in machine tools, wood-working machinery and hoisting and weighing apparatus. The idea is a good one if it is carried out thoroughly and with discretion. The able editors should try to avoid the fault so noticeable in one of the English technical papers, of misspelling every proper name that can be distorted.

Journal of the Engineering Society of Lehigh University. The February number of this little quarterly contains articles on The Water-Power at Holyoke; Relief Valves for Stationary Engines; Forest Preservative; Economy in Maximum Gradients; Externally Fired Boilers, etc.

The Coal Trade. F. E. Saward. The fourteenth annual edition of "The Coal Trade" is just received. It contains 80 pages of interesting facts and figures relative to the great coal industry of this country. To all interested in this the volume must be of unusual value, for there are found therein the tabulated statements of the tonnages of all mines and coal-carrying railroads, with full descriptions of each company, its territory, and class of production.

Record of New Railroad Construction.

Information of the laying of track on new railroad lines in 1887 is given in the current number of the *Railroad Gazette* as follows:

Colorado Midland, to Florissant, Col., 30 miles.

Georgia, Midland & Gulf, in Georgia, since March 1, 10 miles.

Mineral Belt, from Flagstaff, Ariz., south 8 miles.

This is a total of 48 miles for the week, making 664 miles reported thus far for the current year. The new track reported to the corresponding date for 16 years has been:

	Miles.		Miles.		Miles.		Miles.
1887	664	1883	705	1879	317	1875	138
1886	316	1882	1,358	1878	342	1874	246
1885	160	1881	682	1877	190	1873	472
1884	386	1880	987	1876	304	1872	706

This statement covers *main track only*, second or other additional tracks and sidings not being counted.

The Rothschilds and the Export of Russian Petroleum to India.

Under this heading the last number of the *American Manufacturer*, of Pittsburgh, has an article from the pen of Charles Marvin, the author of the "Coming Deluge of Russian Petroleum" and "The Russians at the Gates of Herat," which, besides being illustrated by a very clear map of the country, from London and Berlin to Calcutta and Ceylon, calls attention to the fact that the Rothschilds are preparing to seriously contest our market for petroleum in India and presumably other Asiatic countries.

The Baku oil has already seriously cut into our European market, the amount supplied to Austro-Hungary, Greece, European and Asiatic Turkey, Gibraltar and Malta having fallen from 26,711,143 gallons in 1883 to 7,643,267 gallons in 1885. Our trade with Asia, however, has grown, the exports to Asia and Oceanica having increased from 19,482,671 gallons in 1877 to 134,512,400 gallons in 1886. Our total exports for the two years mentioned having varied from 262,441,844 gallons, valued at $55,410,132, in 1877 to 469,471,451 in 1886, valued at $40,634,331.

Now the Rothschilds have chartered 5 large steamers, to load for Bombay, each to carry on an average 140,000 cases. As 6,250,000 gallons are to be transported the cases must contain very nearly 9 gallons each, and the various establishments at Batoum can turn out 27,000 cases per day.

The oil is to be refined partly at refineries of the Rothschilds and partly at smaller refineries at Baku, great care being taken in testing the oil, so that it may equal the best American brands commonly sold in India and create a good impression in that country. As the distance from Batoum to the Suez Canal is but little over 1,300 miles, against over 5,000 from New York, and as oil at Batoum is lower than here, a profit is calculated as follows: "Reckoning a pood (4½ English gallons, say 5.4 American gallons) of oil at Baku at 11 copecks, and the cost of railway transport to Batoum, with delivery charges, at 17 copecks, a total of 28 copecks is obtained. Adding to this the 4 copecks for packing and 40 copecks for freight from Batcum to Bombay and it works out that a pood of Russian petroleum can be sold at Bombay for a rouble, while the American article sells at 2⅓ roubles. Of course the Americans will lower their price, but there is plenty of margin left for Russia to beat them. The Indian market is well worth fighting for. The annual demand reaches 10,000,000 poods, or 45,000,000 gallons of oil."

If the above estimate is correct it seems as if the proper thing for Americans to do is to go over there and take charge of the production and distribution. The Russian government has just allowed private parties to put on tank cars and the Nobels and Rothschilds have put on 700 ten ton cars.

No pipe line has yet been built. From the Caspian to the Black Sea is about 500 miles, and it is proposed to lay one from Baku down the west shore of the Caspian, through Persia to Bashire on the Persian Gulf, a distance of over 1,000 miles, a project which "would have to stand the ordeal of the fierce political opposition of England, ever anxious to preserve the Persian Gulf from Russian commercial activity."

Mr. Jeans on Railways and the Development of India.

The agitation, referred to in our last issue, in favor of extending the railroads of India, found expression in a meeting held on the 16th ult., in connection with the East India Association, to hear a paper by Mr. J. S. Jeans on this subject.

As reported by the *Railway News*, Mr. Jeans maintained that the government in assigning the great loss on exchange as a reason for reducing expenditures in India had made a mistake; the real difficulty is in India's poverty. "The remedy is first to cure that disorder. To stop railway progress because the country had an additional burden thrown upon it is just about as sensible as to argue that the only possible way of recovering a heavy loss is to take steps to make another." Attention was called to the fact that India, unlike all other colonies of England, was unable to take the initiative in railroad building, having to wait for the express sanction of the authorities in Downing street; and the interests of the country had been administered "by a council of gentlemen who had apparently failed to appreciate the incalculable importance of making railway extension paramount, as the one great means of enabling India to become rich, as our own country, the United States, and the colonies, for the most part, had already become by the same process."

Referring to the wheat question he asserted that the exports had increased from nothing in 1860 to over 10½ million bushels last year, and thought that the 100 million acres now lying waste in India could be let at an average of two shillings per acre, yielding the government an additional sum of £10,000,000 a year, and at the same time supplant our wheat in the English market, and the same considerations applied to the cotton trade, the exports of which to England had fallen from 25 per cent. of England's total importation in 1871 to 10 per cent. in 1885.

The author asserted that the average freight rate over all grades carried in India in 1866 was 62 per cent. higher than the average rate in the same year on American lines, and showed, indirectly, that the average net increase on all the lines amounted to 6.2 per cent.

The discussion developed some views in opposition to those advanced by Mr. Jeans, it being contended by some that irrigation was more necessary than railroads. Mr. Nanda Lal Ghosh, objecting to extensions out of the revenue of the country, and General Rundall doubting whether India produced sufficient food for its population, called for the development of its great natural and artificial waterways by the use of steamboats, "which would enormously reduce the cost of carriage which was necessarily very high on railways."

THE SCRAP HEAP.

The First Baker Heater.

At a recent hearing before a committee of the Connecticut Legislature on the subject of safe methods of heating cars, Mr. W. C. Baker stated that twenty years ago, the first car heated by hot water, and with but *one fire*, ran on an express train from New York to Boston, and through the depot in Hartford. The late Henry Ward Beecher was a passenger in that car, and examined the new heater, and predicted for it the great success it has since achieved.

Going! Going! ——!

President Garrett was in New York all day yesterday. He attended the meeting of the Trunk Line Presidents, and dined at Delmonico's. He was not "in" to anybody less than millionaires.

Henry Villard is credited with having now got Mr. Garrett's ear, and one of Mr. Garrett's options on the Baltimore & Ohio bargain. A blind pool, with Jay Gould and one of the big express companies reported among the interested participants, is the reputed programme.—*New York Times.*

Give it a Glass of Beer.

Chairman (of the board)—"The master mechanic reports the Deep River bridge unsafe." Directors (without a dissenting voice)—"Give it a new coat of paint."—*New York Sun.*

Hyperbole.

"What an outrage to cram so many into this railway coupé." "I should say so! Why, a sardine is a hermit in comparison."—*Fliegende Blätter.*

Rich Mines Sold.

A syndicate of Cincinnati capitalists has just purchased the Soddy Coal Co.'s property in Hamilton County, Tenn., comprising more than 6,000 acres of mineral and farming lands. The price paid is not known, but it is understood to have been nearly $500,000. E. Zimmerman, the President of the

Cincinnati, Hamilton & Dayton Railroad Co., is one of the principal stockholders. The Soddy mines are more successful and have a larger number of drifts in operation than any other mines in the county.

Waste Paper, in Bales, C. L. and L. C. L.

Under the new law, the Chicago, Milwaukee & St. Paul has called in 18,000 annual passes and some 20,000 persons will be cut off from free rides. Besides those who use trip passes and shippers' passes, the Wisconsin Central issues 5,000 annual passes, a wagon load of 10-ride coupon passes, and the thousands of trip passes issued in the course of the year. The Chicago & Northwestern has 15,000 annual passes in use; the Milwaukee, Lake Shore & Western, 2,500; the Milwaukee & Northern several hundred, and other roads in proportion.

A Son Always Looks up to His Father.

It is a wise stock that knows its own par.—*Life.*

A Smasher and a Masher.

During the last few weeks three Wisconsin Central trains have been thrown from the track about four miles from Eau Claire by unknown parties throwing the switch. Armed men have been watching the switch night and day. One day this week the Chippewa Falls train was flagged near Badger Mills by a boy who said he had just seen two men putting logs and pieces of rail on the track.

A Chicago detective who has been sent to investigate these accidents was on the train and made a search. The boy was arrested on suspicion of being at the bottom of all the accidents. His name is Eddie Bradley. In a package which he carries is a life insurance policy, together with 20 or 30 letters directed to Minneapolis young ladies with a lock of hair in each and a will bequeathing all sorts of personal effects to various young women. He is thought to be insane.

Iowa Taxation of Railroads.

The Executive Council has concluded the work of assessing the railroad property in the state of Iowa for purposes of taxation. The total valuation for that purpose is $38,000,000, a net increase of $4,000,000 over the valuation of last year. The assessment covers a total of 7,903 miles, with an average assessed value per mile of $4,851.

TECHNICAL.

Locomotive Building.

The Hinkley Locomotive Co. of Boston is building 3 18x24 double-end engines for the Worcester & Shrewsbury road.

This company has just finished 3 18x24 standard engines, which are offered for sale, and have 3 more of the same pattern under construction for stock. They have recently delivered the Mogul "Thomas P. Clark" to the Addison & North Pennsylvania road.

The Old Colony Railroad Co. has recently finished at their shops in South Boston engine 136, which is an exact duplicate of No. 132, illustrated a short time since in the *Railroad Gazette.*

The Car Shops.

The Alabama Car Works have taken a contract for castings for 700 cars for Murray & Stevenson, of Anniston, Ala.

The contract for the new cars to run on the limited express of the Atlantic Coast Line between New York and Jacksonville, Fla., has been given to the Pullman Palace Car Co. Covered platforms are to be introduced on these trains.

Manufacturing and Business.

The Portland Electric Light Co., of Portland, Ore., has contracted for four 60 horse-power Westinghouse engines. The National Tube Works of McKeesport, Pa., have just put in a 125 horse-power Westinghouse engine for electric lighting.

The Chalmers-Spence Co., of New York, miners and shippers of asbestos, are increasing the capacity of their works to accommodate an increasing business. This company now owns the largest asbestos mines in the world.

The Allen Paper Car Wheel Co. has removed its general offices from New York to Chicago. After May 1, the New York office will be in charge of Mr. J. C. Beach, Vice-President of the company.

The Boston Belting Company has just completed and shipped to the Pennsylvania Railroad, for its new grain elevator at Philadelphia, a belt 850 ft. long, 36 in. wide, 5-ply, which weighs about three tons.

The Wainwright Manufacturing Co., 65 and 67 Oliver street, Boston, Mass., report a second order from Japan for a corrugated tube feed-water heater of large size to be used in connection with the large Edison plant soon to be installed in that country.

Iron and Steel.

The Welker Iron & Steel Co. has been incorporated at Detroit, Mich., with a capital stock of $250,000, for the purpose of mining and manufacturing iron and coal. The incorporators are: Columbus P. Paterson, of Detroit; Adna E. Kendall, of Toledo, O., and Earl L. Shepard, agent; George N. Robinson, John N. Glidden, trustees, of Cleveland, O.

The Etowah Iron & Manganese Co., at Atlanta, Ga., has organized with the following officers: President, J. W. Rankin; Vice-President, L. J. Hill; Secretary, Aaron Haas; Treasurer, A. W. Hill. Capital stock, $3,000,000.

The Sanderson Steel Works at Geddes, a suburb of Syracuse, N. Y., were burned on March 28. Loss, $220,000. The property belonged to a Sheffield, England, concern. The works will be rebuilt immediately.

The Columbian Iron Works and Dry Dock Co., of Baltimore, have been awarded the contract for building two steel ferryboats for the Staten Island Rapid Transit Co., to run between Staten Island and New York. The specifications call for inclined compound engines, the hulls to be built of steel throughout. The dimensions of the hulls are to be 236 feet length over all and 64 feet breadth over guards.

The Rail Market.

Steel Rails.—A quiet market is reported, there being but one sale of a 2,000 ton lot, for which $40 was paid at tide water, one sale of a 4,000 ton lot of light rails, and a part of a lot to a Florida road taken on speculation. The quotation is $39 @$40.

Old Rails.—Market is dull. One sale reported of a lot of 1,000 tons Foreign Double Heads, for April and May shipment, at $23 delivered at Jersey City. Foreign Double Heads and Tees at $22.50.

Scrap Iron.—Quiet market, with Yard Scrap at $24@$24.50, and Foreign for shipment, $22.50@$23.

Rail Fastenings.—Spikes are quoted 2.55@2.70c. delivered; Angle Fish Bars, 2.20@2.25c.; Bolts and Nuts, 3.10@3.20c.; and Bolts and Hexagon Nuts, 3.35@3.55c.

The Goodwin Dump Car.

Mr. Aug. Mordecai, Division Roadmaster on the New York, Pennsylvania & Ohio, makes an official report on the performance of this car in trials made last January. The car has already been described in the *Railroad Gazette*, and only that part of the report which summarizes the work done is given here.

"The car was loaded by hand with 23,740 lbs. of ore Jan. 10, at Cleveland, arrived at Sharpsville Jan. 13; was dumped on the 14th; loaded from a platform with 10 tons of slag, arriving in Cleveland on the 19th; was held, in order that I might witness the dumping, until the 23d; loaded with 27,800 lbs. of ore, arrived at Sharpsville again on Jan. 26; again loaded with 10½ tons of slag, it was sent to Cleveland on 29th, and on Feb. 2 returned to Sharpsville with 20,800 lbs. of ore. On account of a strike among the furnace hands the car was held at Sharpsville several days; leaving then, empty, for Cleveland, Feb. 9, arriving Feb. 11, having made altogether a mileage of 504 miles. I find, from car accountant's record, that of two gondola cars, taken at random, leaving Cleveland for Sharpsville with ore on Jan. 10, in same train with dump, one made, in the same time, 366⅛ miles and one 426¼ miles; and then they were not loaded all the time when running. As stated above, the movement of the dump car was not expedited by its being on its trial trips; but on the contrary, it was delayed, so that we can safely assume that had the dump been regularly in service it would have made another round trip, which would have brought its mileage up to 672 miles, or 85 per cent. and 56 per cent., respectively, more than that of the other cars in question. This is, it seems to me, directly traceable to the fact that the car is a good dump-car, handling dumpable material and that it was therefore not delayed at terminal points. The car seems to be well adapted for handling slag from the furnace, for ballast, and could be used with advantage in that service." Mr. Goodwin adds: "The actual tonnage service of the (four-wheeled) dump was 4,760.28 ton-miles. This is something in excess of performance of average eight-wheeled gondola, in the same trade. Had the dump made the round trip lost by detention (as above stated), she would have made 6,613 ton miles, or 36 per cent. more than the average eight-wheeled gondola running with her."

The Argument Against Stoves.

The following very effective arguments against the use of stoves in passenger cars were used by Mr. W. B. Baker when before the Committee of the Connecticut Legislature on Railroads.

"The proper location of the fire for *safety*, whether placed *within* or *beneath* the car is certainly *midway* in the car, that neutral point in case of collision, when one car is driven into another or telescoped. This was exemplified in the late accident on the Boston & Providence, where the stoves were in the middle of the car. Had the stoves met the concussion at the end of the car, they would certainly have been broken to pieces, and their fire knocked in all directions.

"I do not think that any railroad company would object to legislation prohibiting stoves. They know it is even for their pecuniary interest to have them abolished, as stoves are the most expensive thing about a car. Two stoves actually occupy the car space of four passengers, but *really* prevent eight from being seated. This room is, proportionally, in a car costing $5,000, worth $332. The expense for fuel and attendance is four times that of a good hot water heater. Each pair of stoves will consume 14 tons of coal a year, which, at $4 a ton, is $56.

"With stoves not only are there two fires to menace the passengers with cremation, but two *blazing* fires, as against the hot water heater with its *one dull* fire. One heats solely from the surface actually in contact with the coal, and this surface being of very limited extent, must of necessity be *constantly red hot* on cold days to be felt even a few feet off, while with the hot water heater the water within or around the fire absorbs most of the heat and carries it off and distributes it equally all over the car, giving every passenger an optional warming-pan at his very feet.

"As the stove is allowed by law, and its first cost is small, the competition for cheapness in car construction will still tempt many to adopt it. And while the traffic in cheap stoves continues, there is little encouragement for inventions that must, from their nature, be higher priced. Necessity gave place to the stove, custom has tolerated it, and habit has habituated us to it. But now public disapprobation and a just law will abolish this burning evil forever. No more burnt offerings to this cast-iron idol of fire!

"The law protects us from the incendiary and against combustibles and explosives, then why not against the constant exposure to danger from the two flaming fires that stand deadly guard at the only avenues of escape from the broken car?

"We do not ask you to pass a law compelling railroad companies to adopt *our* heater, as there are others of similar qualities that are safe from fire as compared with stoves, but abolish at least *one fire* from every passenger car in your state."

Electric Lights on Cars.

A Connecticut River Railroad passenger train is now being fitted with appliances for electric lighting, and it is expected that the arrangements will be completed within a few days. The system differs from any now being tested, in that the power is taken directly from the journal on the baggage car, so that there is no delay and no expense in charging the batteries, after the plant is once in. Heretofore the difficulty in using power from the trains has been in getting a uniform rate of speed, as the dynamo must run at a regular speed in order to furnish a uniform light. This difficulty has been met by a speed regulator, the invention of S. H. Barrett and C. E. Barrett, of Springfield, Mass. By this appliance, when the dynamo reaches a certain spot it will remain at that point. To obviate any trouble during stops at stations, a sufficient amount of electricity is stored in each car, and the storage is replenished as soon as the train starts again.

The connection between the cars will be by automatic couplings, which work perfectly. The dynamo in the baggage car is self-regulating and a boy can take care of it. Ten lights will be placed in each car and one on each platform. The system will be applied on a train now heated by steam from the engine, so that there will be no fire in the cars.

The Williames Car Heating System.

This system (utilizing the exhaust steam from the Westinghouse pump—described in the *Railroad Gazette*, March 18) was tested on the Central Vermont road, Friday, March 25. A train consisting of the engine, one baggage and two passenger cars left St. Albans, at 4 p. m., arriving at White River Junction at 10 o'clock. The temperature outside was about 10° above zero, and the cars were kept comfortably warm. The only trouble experienced was with the baggage car, which was not sufficiently piped. A longer train will be equipped for final test. As this was the first trial on any train there are a few minor changes which will be made to perfect the system.

The Burlington Brake Trials.

The following circular has just been issued to the different brake companies:

AURORA, Ill., March 22, 1887.

"The Master Car-Builders' Committee hope that those companies intending to compete at the Burlington (May, 1887) tests will take the precautions of testing and proving their apparatus before coming to Burlington. The committee especially recommend that preliminary tests with the 50 cars be made, in order that no delays may be necessary in changing and altering the different parts after the tests have been commenced. It would be well to ascertain that the brake shoes are made of soft iron, and are properly fitted to the circumference of the wheel. We especially urge that attention be given to the engine brake, believing that a good engine brake has more influence in stopping a train than is usually supposed. Your attention is called to the following clause from paragraph 5 of the rules adopted at Pittsburgh: 'Any competitor desiring to enter should communicate with the Chairman of the Committee, Mr. Godfrey W. Rhodes, Aurora, Ill., prior to April 1.' It is especially important this notice be sent, in order that provision may be made at Burlington for promptly carrying out the tests. The provision cannot be made unless the demand is previously accurately known."

The trials will commence on May 9, and are expected to last about a fortnight. The rules in governing the tests were given on page 93 of the *Railroad Gazette*, Feb. 11, 1887.

Rolling Sandberg's Goliath Rail.

On March 10 the Société Cockerill at Seraing began rolling the 101-lb. rail for the Belgium state roads. The result is said to have been very successful, each ingot of 2,200 lbs. giving two rails of 9 metres of remarkably perfect section. A short section of track was laid, part on wooden ties and part on the Post metallic tie. This heavy rail will be shortly tried on several sections of the Belgium state roads, particularly on the inclined plane between Liége and Verviers, and on the line of the Plateaux de Herve.

Steel Manufacture.

Some weeks ago, the *Engineering and Mining Journal*, New York, began the publication of a treatise on "The Metallurgy of Steel," by Mr. Henry M. Howe, which promises to be exhaustive. The author's knowledge is evidently ample and minute, and he is troubled with no superstitions about our ability to determine the working qualities of steel from its chemistry. He says, "no matter how accurate and extended our knowledge of ultimate composition and how vast the statistics on which our inferences are based, if we attempt to predict mechanical properties from them accurately we become metallurgical Wigginses." An immense amount of excellent work by an accute and well informed man, has evidently gone to the making of a treatise which will take a high place in the literature of the subject.

Pennsylvania Cars Heated by Steam.

The Pennsylvania has been running trains for some days now between New Brunswick and Jersey City, made up of cars heated by steam from the locomotive. The experiment has proved quite successful.

A Large Passenger Locomotive.

The Strong Locomotive Improvement Company have contracted to supply some large passenger locomotives to a Western line. The engines will be of the American type, with a rear pony truck, and will have the Strong valve gear and the Strong form of locomotive boiler, the ordinary fire-box being superseded by two corrugated flues and a combustion chamber. The leading dimensions of the new engines will be as follows:

Cylinders	19 by 24 in.
Driving wheels, diameter	68 in.
Weight in working order, estimated	116,000 lbs.
Boiler, diameter of shell	58 in.
Corrugated flues, length and diameter each	7 ft. by 42 in.
Heating surface, 234 flues, 2 in. dia., 10 ft. long	1,500 sq. ft.
Grate area	50 sq. ft.

The boiler will be made at the Continental Iron Works, Brooklyn, and will be tested to 300 lbs. per square inch. All the plates will be of steel $\frac{7}{16}$ in. thick, and welded at the joints. The process of corrugating the flues will reduce the thickness of the plates after corrugation to about $\frac{5}{16}$ in. The working boiler pressure will be 175 lbs. per square inch, and it is anticipated that an average pressure on the piston of 80 lbs. per square inch can be maintained at a considerable speed. If this expectation is realized, the engine will be able to indicate over 1,300 horse-power at a speed of 50 miles per hour, a feat that has probably never been performed by any locomotive.

Vulcabeston.

This is the name of a new article, intended to combine all the valuable qualities of asbestos and India rubber, of which, as its name indicates, it is mainly composed, although other vulcanizable materials enter into its composition. It forms a substance of the toughness of horn, although it can be made of any degree of flexibility; it is a non-conductor of electricity, and is said to stand the severest test of acids, steam, gases, etc. The quality of permanently resisting heat, the characteristic feature of asbestos, renders the new material well adapted for use on steam engines, for which purpose it is employed by the United States government.

Vulcabeston can be used for molded piston-rod packing rings, made to fit any sized rod or stuffing box, and sprung into place with a slight pressure, one or more rings being used to form a steam-tight joint. It is claimed that these rings do not wear the rod as much as metal rings and are self-lubricating. A set has been in use over 11 months on an engine run at 140 revolutions per minute, and they are said to be in as good condition as when first put in.

It is claimed that when used for piston-rod packing in the form of flexible rope, it will not sink or blow out, and is especially adapted for use on locomotives and in other places where loss of time in repacking is of consequence, and where ordinary steam packings are inadmissible. It is claimed that in consequence of its great strength and durability, it can be used instead of metallic packing. Vulcabeston is also made into sheet packing of hard, medium and soft qualities. Any special forms can be readily made to order. It can, if desired, be made of any color, and is thus well fitted for a variety of ornamental work and other special uses. It is manufactured exclusively by the Johns-Pratt Company, of Hartford, Conn.

The Fast Tracklaying on the Manitoba.

The firm of Shepard, Winston & Co., of St. Paul, Minn., which is to build the long stretch of road for the St. Paul, Minneapolis & Manitoba Company in Dakota and Montana, will undertake to grade from 5 to 6 miles of way each day. Track is to be laid by the usual method of iron cars, but with a large number of these, so as to load a mile of material and send to the front, and as fast as the first car is unloaded, move it from the track, and pass the loaded cars by. By this method it is thought 5 miles of track can be laid in 11 or 12 hours' time.

The Car Heating Question.

The New York Railroad Commissioners have presented a supplementary report on the subject of heating cars. The report says that facts now in the possession of the Board demonstrate that doubts as to the practicability of heating either by steam from the locomotive or from a special car are fast being dissipated. All the improvements thus far proposed in the car-stove to a greater or less extent simply reduce the percentage of risk, but do not eliminate it. There seems to be no way absolutely to get rid of the dangers incident to the car-stove except abolishing it entirely. Since the tendency of invention and of experiments by railroads seems to be toward heating from the locomotive, and since that method promises greater security to the traveling public, it is thought best to urge that all efforts to accomplish the needed reform be made in that

direction rather than divided between expensive safety heaters, which must ultimately be done away with, and methods of independent steam or hot-air heating.

The Assembly Railroad Committee reported favorably the O'Donnell bill against stoves and oil lights.

The Sewall Heater on Long Trains.

The Maine Central Railroad Co., which has been experimenting with the Sewall continuous steam heating apparatus, made a test of its efficiency on a 12-car train on Friday last. One baggage car and 11 passenger coaches were equipped and attached to a locomotive which they class as an "8-car engine," and made the 59-mile run from Portland to Maranacook against a strong north wind, in weather described as "bitter cold." The temperature in all the cars was under easy control and was maintained at 80° in the rear car, without difficulty and apparently without interfering with the work which the engine was required to perform in hauling the heavy train. Representatives of the mechanical departments of the Pennsylvania, the Lake Shore, the Maine Central and other roads were on the train for the purpose of examining and reporting upon this system, but we have received no exact data other than their expressions of satisfaction.

The Gold Heating System.

The Providence, Warren & Bristol road have ordered all their baggage cars and passenger coaches equipped with this system, and hereafter no stoves will be used on passenger trains. This action is taken after prolonged trial and careful observation of the first train equipped, and was recommended by the Superintendent, Mr. Waterman Stone.

Water Purification.

The Newark Filtering Company have instituted suits in the U. S. Circuit Court for the District of New Jersey against Wm. M. Deutsch, the National Water Purifying Company, Albert H. Leeds and the United States Pure Water Supply Company, for alleged infringements on patents of the Hyatt Pure Water System.

The first of these is based upon Letters Patent No. 293,747, the principal claim of which is as follows:

"In the art of filtration by means of beds of granular material, the method of preventing the deposition of silt and other onoxious substance, which consists in agitating the upper part of the bed to a sufficient depth without disturbing the lower part of the bed or interfering with its functions as a filtering agent, substantially as set forth"

The theory of the case is that this claim is infringed by the method of the defendant described in his circulars, by which he cleanses the upper portion of the bed without disturbing the lower, and which he claims is a great advantage.

In the Johnson infringement suit Justice Bradley sustained the claims of the Hyatt patents, perpetually enjoined the defendant and appointed a Master to ascertain and assess damages arising from the infringements.

Another Large Mail Steamer.

The Inman and International Steamship Company have concluded a contract with Messrs. Laird Brothers, of Birkenhead, for the first of their new steamships for the Atlantic service, and she is to be ready for the passenger season of next year. The new vessel is to be constructed of steel, and be of 8,500 tons register, or fully equal in size to the largest steamers now crossing the Atlantic. She is to be supplied with independent twin screw engines. This will be the first Atlantic mail steamer provided with twin screws. There will also be a special arrangement of water-tight longitudinal and transverse bulkheads, so as to make her a practicably unsinkable vessel under all circumstances. The new steamer will be built to meet the British Admiralty requirements for an armed cruiser.

Train Lighted by the Electric Light.

The Boston & Albany are now running an entire train, including baggage car, lighted by electric light. The Julien storage battery is employed. The train left Boston for the first trip on the 29th ult., and will henceforth run regularly between New York and Boston, leaving at 4:30 p. m.

Iron and Steel Imports.

For the first two months of 1887 we imported 196,000 tons of iron and steel more than in the same period of 1886, or 73 per cent. more. The increase in value, however, of the import is but 47 per cent. The improvement in the British iron and steel trade is confined to the demand from the United States, for if shipments to us are thrown out, the February exports would show a decline of 20,000 tons.

Sixty Thousand Lbs. Traveling Crane.

The Yale & Towne Manufacturing Co., of Stamford, Conn., are building a 60,000 lbs. capacity power traveling crane, of about 55 ft. span, for the William Cramp & Sons Ship and Engine Building Co., Philadelphia. This heavy crane will go into their machine shop, and will doubtless be used in handling some of the heavy work they are to build for the government cruisers.

Bessemer Production in the United States and England.

The total production of Bessemer steel ingots in the United Kingdom during the year 1886 amounted to 1,570,520 tons, which is an increase of 266,393 tons on the production of the previous year. In the United States the total make of Bessemer steel ingots in 1886 was 2,269,190 gross tons, or 749,764 tons more than in 1885. The production of Bessemer ingots in the United States was thus 698,670 tons more than that of the United Kingdom.—*London Iron Trade Exchange.*

RAILROAD LAW—NOTES OF DECISIONS.

Powers, Liabilities and Regulation of Railroads.

In Michigan it is decided that in assessing damages to be paid in condemnation proceedings by one railroad company for the right to cross the track of another, the cost of maintaining signals, a crossing system, and a watchman, if necessary, are proper elements of damage, but not the cost of stopping trains at the crossing; also that the statement that the taking of the property is "required" for public use is equivalent to the statutory expression that it is "necessary" for public use.[1] In Minnesota it is held that in proceedings to condemn property for a railroad, to constitute unity of property between two contiguous but *prima facie* distinct parcels of land, there must be such a connection or relation of adaptation, convenience, and actual and permanent use, as to make the enjoyment of the parcel taken reasonably and substantially necessary to the enjoyment of the parcel left, in the most advantageous and profitable manner in the business for which it is used.[2] The Supreme Court of Errors of Connecticut, in affirming the constitutionality of an act of the Legislature providing for a bridge at a certain crossing at Hartford, and for the taking and appraisement of damages for lands decides that the Legislature, having determined that the intersection of two railways with a highway in said city at grade is a nuisance dangerous to life, may, through the instrumentality of a commission, compel such railroad and the city to become severally the owners of the right to lay out a new highway and new railways there, in such manner as to separate the grade of the highway from that of the railways, and may apportion the expense thereof between the two railway corporations and the city.[3] In Iowa it is decided by the Supreme Court that a railroad company which purchases the road of another company during the pendency of an appeal from an award of damages in a condemnation proceeding to obtain a right of way for the road purchased is liable for the costs incurred on such appeal by the company from which the road is purchased.[4] In Illinois the Supreme Court holds that in proceedings to condemn land for a railroad each party has the right to a jury trial, but either may waive it.[5] In Pennsylvania the Supreme Court decides a number of points—none of them new ones—as to the assessment of damages on the condemnation of land.[6] In New Jersey it is held that corporations formed to construct or maintain underground railroads are not entitled to condemn the fee simple of lands for their right of way but only an easement.[7]

In Pennsylvania it is held by the Supreme Court that a contract by a physician with a railroad company to render professional services to employés of the company or to those to whom the company is liable for personal injuries, does not bind him to render such services to persons injured while trespassing on the property of the company.[8]

In Pennsylvania the Supreme Court holds that the purchase by a foreign corporation of the capital stock of a Pennsylvania corporation, as a device to enable the former to hold real estate in Pennsylvania, is a violation of the act of 1855, which prohibits foreign corporations from acquiring or holding any real estate within the commonwealth "directly in the corporate name, or by or through any trustee or other device whatsoever," unless authorized by the laws of the Commonwealth: and lands so held are subject to escheat, although the legal title to the lands is in the Pennsylvania corporation.[9]

Injuries to Passengers, Employes and Strangers.

In Kentucky a man was waiting for a train at a station where the ticket-office was on one side of the track and the platform for entering the train on the other, and in crossing the track to the platform, after buying his ticket, he was struck by an engine running past the station at a high rate of speed. His widow sued the railroad under a statute making it responsible for "wilful neglect." The trial Court thought there was no evidence to sustain the charge and nonsuited her. But the Court of Appeals is of a different opinion and has ordered a new trial. In the view of this Court, while a railroad may meet the necessity of the traveling public for rapid transit, by running at a high rate of speed along those parts of the track where others have no right to be, yet in running past stations, especially one where the ticket office, being placed on one side of the track, and the platform on the other, the passengers are compelled to cross the track, the railroad must look out for the safety of those so crossing. An engine approaching such a station about the time a passenger train was due, was bound to slow up, and give warning signals; and that, too, though the station was only a flag station.[10] In Massachusetts, a female passenger in leaving the station after dark, fell over an obstruction on the walk and was injured The railroad company was held liable on the ground of negligence in permitting the obstruction to remain there and in not sufficiently lighting the premises.[11] In Indiana the Supreme Court decides that where a person is found dead in a car after a railroad collision or disaster the presumption is that he was rightfully in the car as a passenger and had paid his fare.[12]

In Illinois a passenger was injured by an attack by a mob on the train in which he was riding. The offenders were strikers who resented the action of the railroad in carrying to their work non-union men who had taken the place of the strikers. The Supreme Court holds that the company is not responsible to the passenger. It was not bound to keep on its trains a sufficient police force to repulse a mob. Nor was the company in the wrong in taking the non-union men on its train knowing the hostility of the strikers. The carrier was bound to receive the non-union men. A common carrier cannot refuse to receive persons in its conveyances, simply because their exercise of their lawful rights has become offensive to their neighbors, and provokes their hostility.[13]

In Florida, the court rules that an action to recover damages for personal injuries received by a passenger through the negligence of a common carrier, abates on the death of the plaintiff, both at common law and under the statute of that state.[14] In Connecticut, an action for personal injuries does not survive to the estate of the person injured after his death; in Massachusetts it does. The Supreme Judicial Court of Massachusetts decides that where an action is brought in Massachusetts for an injury received in Connecticut and the plaintiff dies, the action does not survive.[15]

Where the law requires that a railroad corporation shall be served with process by delivering the writ to "any station agent or ticket agent," the Supreme Court of Michigan decides that a commercial agent of a railroad is not within these terms. The meaning of the words is judicially laid down thus: "A station agent means the agent locally in charge of the station or depot, and generally is not at the end of the road but at some intermediate place; still there may, no doubt, be a station agent at the terminus. But that name cannot apply presumptively, if at all, to any but one who has general charge at the place where he acts. In large railroads there are usually at terminal points distinct freight and passenger agencies, and frequently several others There is nothing in the name 'commercial agent' which necessarily indicates local authority or local functions. There is a manifest reason for changing the rule which formerly included conductors, who had no local duties or habitation and whose duties might stand in the way of giving attention to local suits, or leaving their trains to hunt up attorneys or other agents. Station and ticket agents, being on the spot, can communicate at their leisure with attorneys or principals."

In Wisconsin a freight car got on the main track from a switch, causing a collision with a regular train, and injuring one of the brakemen. The evidence showed that the freight car had been left on the side track with brakes properly set; that a train had passed safely an hour previously; that the night was dark and stormy, with a high wind. The Supreme Court on these facts thought it a case of pure accident for which the company could not be made responsible. And if this were not so, and there was negligence in any one, it was in the person who had charge of switches, and whose duty it was to see that the track was clear. But he and the brakeman were "fellow servants," for whose negligence one toward another the master was not liable.[16] In Minnesota, the Supreme Court holds that the foreman at a round house is a "fellow servant" of an employé working there under him—a conclusion from which one of the judges very properly dissented.[17] It is not negligence to pile coal on the tender above its top. A trackwalker in the employ of a railroad in Wisconsin was struck by a piece of coal falling from the tender of a passing engine. The Supreme Court held that it was a pure accident, for which the company was not liable.[18]

A highly important case comes from Michigan. A corporation of that state engaged in mining organized a benefit society into which it required its employés to pay thirty cents each a month, the company contributing a like sum. This fund was to be paid in certain proportions to employés who were injured. The company made all the men sign an agreement that in consideration of participating in this fund they eleased the corporation for any liability to them for any injury whether due to the negligence of the corporation or its servants or not. The Supreme Court rules that an employé is not bound by this provision unless it is shown that at the time he signed it he clearly understood what he was agreeing to, and that an injured employé may bring an action against the corporation for an injury caused by its negligence without paying back what he had received from the benefit fund.[19]

A New York case illustrates the duty of a railroad to adopt rules for the safety of its employés. A car repairer, while under a car, was killed by another car being backed against it. Some roads, it seems, have a rule to this effect: "that a blue flag or light on the end of a car means that men are working under it, and it must not be moved. The defendant had no such rule, and on this ground the Court holds it negligent and liable for the death of the car repairer.[20] In Illinois, the Supreme Court rules that the fact that the company employs local car inspectors does not relieve the brakemen from the duty of inspecting the brakes on the cars on which they are engaged.[21]

In Wisconsin, a car of lumber belonging to one Miller was detached from a train and left on a side track at a place pointed out by him. Afterwards, on the same day, a man named Winnefeld met Miller and they had a conversation about the car-load of lumber. Winnefeld thought it was all fence lumber, and doubted whether there would be much demand for it. Miller said that it contained other kinds of lumber, and they walked over to the car and examined the lumber. They went around the car and stopped at the east end it, between the rails of the track, close to the car, and facing it, where they continued their conversation about the fence lumber. While thus engaged, the lumber car was suddenly struck from the West with sufficient force to move it East on the track to the coal-shed, and it threw Miller over backwards, ran over him, and so injured him that he died during the same afternoon. It appeared that two or three flat cars were standing upon the same track, and that they ran down the track East; the foremost one striking the lumber car, and thus causing the death of Miller. On these facts neither the trial Court nor the Supreme Court was able to find any act of negligence on the part of the railroad company or its servants, and a suit for damages for causing his death brought by his widow was dismissed.[22]

Carriage of Goods and Injuries to Property.

In Wisconsin, in an action for damages caused by fire and cinders escaping from a passing steamboat, the Supreme Court held that to tell the jury that the defendant in the equipment and machinery of its vessel must use the "utmost care" is not wrong, for this may be under the circumstances synonymous with "reasonable" care. But on a question of the burden of proof, the plaintiff's verdict was set aside, and for the second time.[23]

In Maine the Supreme Judicial Court again announce the principle that a railroad company is not an insurer against loss by fire caused by its locomotives—to recover, some sort of negligence must be proved.[24]

In Massachusetts, when a railroad is completed and in running order, it is the statutory duty of the company to fence its track with good and sufficient fences: and until its fences and cattle-guards are duly made, the corporation and its agents are liable for the damage done by its agents or engines to cattle on the railroad, if occasioned by the want of such fences and cattle-guards, and the Supreme Court construes the word "agents" in this connection to include engineers.[25]

[1] Flint & P. M. R. Co. v. Detroit & B. C. R. Co., 31 N. W. Rep., 281.
[2] Peck v. Superior Short Line R. Co., 31 N. W. Rep., 217.
[3] Woodruff v. Catlin, 3 New Eng. Rep., 254.
[4] Frankel v. Chicago, B. & P. R. Co., 30 N. W. Rep., 6 9.
[5] Chicago, Milwaukee & St. Paul R. Co. v. Hock, 7 West Rep., 697.
[6] Phil. & Read. R. Co. v. Getz 5 Cent. Rep., 691; Pittsburgh Junction R. Co. v. McCutcheon, 5 Cent. Rep., 759.
[7] Hibernia Underground R. Co. v. De Camp, 5 Cent. Rep., 127.
[8] Directors v. Donnelly, 5 Cent. Rep., 268.
[9] Commonwealth v. New York, L. E. & W. R. Co., 5 Cent. Rep., 743.
[10] Nichols v. Chesapeake, O. & S. W. R. Co., 3 S. W. Rep., 181.
[11] Wentworth v. Eastern R. C., 3 New Eng. Rep., 355
[12] Louisville, New Albany & Chicago R. Co. v. Thompson, 6 West. Rep., 555.
[13] Chicago & Alton R. Co. v. Pillsbury, 6 West. Rep., 790.
[14] Jacksonville St. R. Co. v. Chappell, 1 South. Rep., 10.
[15] Davis v. New York & New England R. Co., 3 New Eng. Rep., 408.
[16] Toner v. Chicago, M. & St. P. R. Co., 31 N. W. Rep., 104.
[17] Gonsior v. Minneapolis & St. L. R. Co., 31 N. W. Rep., 515.
[18] Schultz v. Chicago & N. W. R. Co., 31 N. W. Rep., 321.
[19] O'Neil v. Lake Superior Iron Co., 6 West. Rep., 624.
[20] Abel v. Delaware & Hudson Canal Co., 5 Cent. Rep., 615.
[21] Chicago & Alton R. Co. v. Bragonier, 6 West. Rep., 728.
[22] Miller v. Chicago & St. P. R. Co., 31 N. W. Rep., 479.
[23] Atkinson v. Goodrich Trans. Co., 31 N. W. Rep., 164
[24] Lowney v. New Brunswick R. Co., 3 New Eng. Rep., 269.
[25] St. Johnsbury & Lake Champlain R. Cov. Hunt, 3 New Eng. Rep., 458.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Panama, annual meeting, at the office, New York, April 4.

Colorado Midland, annual meeting, at the office, Colorado Springs, Col., April 4.

Chicago & Alton, annual meeting, at the office, Chicago, April 4.

Joliet & Chicago, annual meeting at office of Chicago & Alton, Chicago, April 4.

Missouri Pacific, special meeting, at St. Louis, Mo., May 10.

Catawissa, annual meeting, at the office, Philadelphia, April 5.

Denver & Rio Grande, annual meeting, at the office, Denver, Col., May 2.

Atchison, Topeka & Santa Fe, annual meeting, Topeka, Kan., May 5.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Atchison, Topeka & Santa Fe, $1.50 per share, quarterly, payable May 16, to stockholders of record April 5.

Delaware, Lackawanna & Western, 1¾ per cent., quarterly, payable April 20.

Evansville & Terre Haute, 1¼ per cent., quarterly.

Mineral Range, 2½ per cent., quarterly, payable April 5, to stockholders of record March 31.

Nashville, Chattanooga & St. Louis, 1 per cent., payable April 20.

New York & New England, 3½ per cent., payable May 1.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *General Time Convention* will hold its spring meeting in New York City, on Wednesday, April 13.

The *Car Accountants' Association* will hold its annual convention in Atlanta, Ga., beginning on Tuesday, April 19.

The *Master Car-Builders' Club* holds its regular meetings at the rooms, No. 113 Liberty street, New York, on the third Thursday in each month.

The *New England Railroad Club* holds its regular meetings

at its rooms in the Boston & Albany passenger station in Boston, on the second Wednesday of each month.

The *Western Railway Club* holds its regular meetings at its rooms in Chicago on the third Wednesday in each month.

The *Western Society of Engineers* holds its regular meetings at its hall, No. 15 Washington street, Chicago, at 7:30 p. m., on the first Tuesday of each month.

The *Association of North American Railroad Superintendents* will hold a meeting at the Hotel Brunswick, N. Y., on April 12.

American Railway Master Mechanics' Association.

The twentieth annual convention of this association is announced to begin at St. Paul, Minn., on June 21, and arrangements have been made with the management of the Hotel Ryan of that city for the accommodation of those who will attend.

Engineers' Club of Philadelphia.

A regular meeting was held March 19.

The Secretary presented, for Mr. Wilfred Lewis, a note upon phosphor-bronze wire for helical springs.

Mr. John L. Gill, Jr., presented a paper on screw threads.

The Franklin Institute appointed a committee which reported Dec. 15, 1864, and recommended that the system of screw threads presented by Mr. Wm. Sellers at a previous meeting should be universally adopted throughout the country. The engineers of the Army and Navy, the associations of the Master Car-Builders' and Master Mechanics of the railroads, and many of the most prominent manufacturers, adopted this system. The members of the two associations above referred to appreciated better than any other class of mechanics the importance of an interchangeable system, for they have to furnish nuts and bolts to replace those lost or damaged on cars of foreign roads (so called) while in use on the railroads which they have charge of. It has been found that while all the roads use the Institute system as regards to the number of threads, but very few of them conform to the standard in other respects. Most of them use taps considerably over size, and some do not use the flat top and bottom; some never did use it, while others after adopting it abandoned it, finding it almost impossible to keep them up to standard owing to the great wear on the taps and dies. While engaged in car building some years since, I gave the subject considerable attention. It occurred to me that the bolts in common use were weakened more than necessary in cutting the ordinary thread. On examining the Franklin Institute thread, I discovered that it had one property that I had never heard mentioned or discussed. When, in describing the thread, it is said one-eighth of the height of the thread is taken off and the groove filled up the same amount, it gives an idea of the shape of the section of the thread, but it does not convey to the mind the most important feature, viz., the increasing of the diameter at the root of the thread, by which the area of the cross section is largely increased. This was the first time that I had ever seen any advantage in flattening the thread. It was well known that a nut one-half the thickness of the bolt was stronger than the bolt, and that the bolt would break at its smallest diameter before the thread would strip. So I proposed to equalize more nearly the strength of the bolt and nut by cutting a more shallow thread —to take two-eighths of the thread off at the top and fill up the groove two-eighths. This reduced the thread to one-half the full size of the V instead of three-fourths, which is the proportion of the Franklin Institute thread. I had a number of bolts or rods made and tested, using an equal number with the V thread, the Institute thread and my new thread. My experiments were made on bolts one inch in diameter. By calculation I found that the Institute thread gave 14 per cent. more area of cross section at the root of the thread than the V thread, and my plan increased the cross section about 15 per cent. over the Institute, or 30 per cent. over the V thread. The experiments with the testing machine confirmed the calculation. All the bolts broke in the thread with a load almost in exact proportion to the quality of the iron and area of cross section at the weakest point. On cutting my new thread on a one inch bolt, the cross section is reduced 20 per cent., the Institute thread about 30 per cent., and the V thread nearly 40 per cent. of the original size in the 4-ft. specimen used, two having the thread stretched 4 in., one 3 in., and one 2¾ in. in 40 in. before they broke. I found the elastic limit in only one of the Institute specimens and not at all in any of the V thread specimens. I am under the impression that car bolts and bridge rods having the new threads, without upsetting, would be better than rods of the same size with upset ends, having large nuts on and the Franklin Institute threads; for it is impossible to heat a rod in a smith fire without the risk of injuring the iron by overheating, and in upsetting, the fibre of the iron is so distorted as to reduce the strength of the rod very materially. Besides, the holes made in the timber or iron through which the rods have to pass do not have to be made any larger than the bolt, while in the size above referred to the holes have to be increased 25 per cent., thereby greatly reducing the strength of the supported member. I am of the opinion that a different thread from that now in general use should be adopted for car and bridge building.

Mr. H. H. Sintzenich, introduced by Mr. Henry G. Morris, exhibited and described a rail chair which he had devised with a view of overcoming the objections to joints bolted through the webs of the rails, and of obviating the necessity for brace or check-blocks on curves. The lack of continuity and consequent wear of rail ends, and the constant loosening of nuts, were noted as the principal objections to present form of rail unions. The invention consists of two pieces of cast iron, one of which bears against one side of the web of the rail, and is held to the tie by three ⅝ in. coach screws, 6in. long, while the other piece abuts against the first and against the other side of the web of rail, forming a clutch which is held in place by a single screw located about 4 in. from the rail. Mr. Sintzenich stated that these chairs have been used continuously, for two winters and one summer, on the Intercolonial Railway at Moncton, New Brunswick, that these screws had not once loosened, and that no other objection to the joint had been discovered.

The Secretary presented, for Mr. F. H. Lewis, a paper upon the Clapp-Griffiths steel for structural work.

The Secretary presented, for Mr. Emile Low, a paper upon maps for railroad surveys.

PERSONAL.

—Charles H. Grant has resigned the position of Secretary of the Chicago Railroad Association.

—D. C. Reinhart, Superintendent of the Catawissa Division of the Philadelphia & Reading, has resigned his position.

—The nomination of Michael Rickard for New York Railroad Commissioner was hung up by a tie vote in the State Legislature this week.

—James M. Oakley, President and General Manager of the New York, Woodhaven & Rockaway Railroad, died on March 25, at his residence in Jamaica, Long Island.

—Howard Carlton, Master Car-Builder of the Baltimore & Ohio, with headquarters at Newark, O., has resigned to accept the superintendency of the Curtis Car Works at Curtis, Md.

—Thomas M. Cooley has resigned as Receiver of the Wabash, St. Louis & Pacific, and has gone to Washington to meet the other commissioners appointed under the Interstate Commerce bill.

—William S. Bartlett, of Clinton, N. Y., committed suicide on March 29. His mind had been affected for a long time. He was one of the founders of the Rome & Clinton railroad, and its President since 1869.

ELECTIONS AND APPOINTMENTS.

Chattanooga Valley.—The incorporators of this new Alabama road are: Messrs. Fayette Lanier, D. Mery, Thomas Lang and R. P. Lanier, of Chambers County, Ala.; W. C. Lanier, R. A. Freeman and E. F. Lanier, of West Point, Ga., and Walter Tate, of Pensacola, Fla.

Cherokee Construction Co.—The incorporators are: Truman Penfield, T. C. Stevens and Henry B. Merrick, Chicago.

Chicago, Grand Tower & Texas.—The incorporators of this Illinois company are: Justus R. Mark, of St. Paul, Minn.; Samuel B. McClocklin, of London, England; James A. Fox, of Detroit, Mich.; Samuel T. Carr and George C. Cook, of Chicago.

Chicago Railroad Association.—S. K. Wilson has been elected Secretary of the Passenger Department of this association.

Chicago, Rock Island & Pacific.—M. P. Washburn has been appointed Northwestern Passenger Agent, with headquarters at Chicago, vice J. A. Sheppard, transferred.

Colorado & Wyoming.—The incorporators of this new Colorado company are Edward O. Wolcott, Joel F. Vaile, Ethan A. Reynolds, Colin A. Chrisholm and Harlan P. Parmelee, all of Denver, Col. The following compose the first board of directors: J. G. Taylor, C. J. Green, C. D. Dorman, G. H. Holden and P. S. Eustes, all of Omaha, Neb.

Elko & Idaho.—The incorporators of this new Nevada company are: C. C. Walker, of Eureka, Nev.; C. W. Friend, Sam C. Wright, J. E. Jones, F. B. Allen, James D. Torryson, Hume Yerrington and T. Coffin, of Carson, Nev.; directors, T. J. D. Torreyson and Hume Yerrington.

Idaho, Nevada & Montana.—The incorporators of this new Nevada company are: C. C. Wallace, of Eureka, Nev.; C. W. Friend, S. C. Wright, J. E. Jones, F. B. Allen, James D. Torryson, Hume Yerrington and T. Coffin, of Carson, Nev.; directors: T. J. D. Torryson and Hume Yerrington.

Jeanerette & Abbeville.—At a meeting in Jeanerette, Ala., the following directors were elected: Wm. Cade, J. Guridon B. Milmo, Geo. Whitworth, F. Welch, F. Moore, W. H. Wills, Dr. S. R. Gay and M. Hilliard.

Lake Erie & Western.—H. C. Parker has been appointed Traffic Manager of this road, with headquarters at Peoria, Ill.

Mexican National.—W. G. Raoul, ex-President of the Central, of Georgia, has been appointed President of the Mexican National.

Michigan Central.—F. O. Waldo has been appointed Ticket Accountant of this company vice George E. King, promoted.

Missouri, Kansas & Nebraska.—The first board of directors is made up as follows: S. O. Thatcher, George Innes, R. Henley, Henry Tisdale and S. W. Sawyer, of Lawrence, Kan.; John Collins, J. H. Phillips, Thomas M. Carroll and S. G. Bigelow, of Paola, Kan.

The directors of this new Kansas company are: S. O. Thatcher, George Inness, A. Henley, Henry Tisdale and Mr. Sawyer.

Moorhead, Leech Lake, Duluth & Northern.—The incorporators of this Minnesota company are W. J. Bodkin, P. H. Lamb, George N. Lamphere, O. Mosness, Moorhead; George W. Whitmarsh, A. O. Kragness, J. P. Jensen, Jorgen Jensen, John McDonald, Frank H. Mitchell, Alonso Wilson, R. M. Probstfield. Directors: Messrs. Bodkin, Lamphere, Lamb, Whitmarsh and Mitchell.

Newport, Jonesborough & St. Louis.—The directors of this new Arkansas company are G. W. Decker, E. L. Watson, B. C. Morrison, G. W. Hurley and Jacob Mortensen.

New York Central & Hudson River.—Edward Walley has been appointed Foreign Freight Agent at Boston, in place of Joseph E. Woods, resigned.

J. E. Provost has been appointed Passenger and Ticket Agent at Brooklyn, N. Y.

Ohio & Northwestern.—The organization was completed this week as follows: President, H. C. Parsons; Vice-President, E. C. Prenin, Cincinnati; directors, Warner Miller and George West, of New York; J. F. Simpson and W. A. Hutchins, Portsmouth, O.; Judge J. W. Bannon, Portsmouth, O.; George Davis, Portsmouth, O.; Emmons Blaine, Chicago; J. L. Vance, Gallipolis, O.; W. H. Wilson, Philadelphia; Clifford S. Sims, Philadelphia; Henry Lewis, R. B. Bowler and H. B. Moorehead, Cincinnati.

St. Johnsbury & Lake Champlain.—At a meeting of directors, S. C. Shurtleff, of Montpelier, Vt., was elected a director in place of the late A. B. Jewett, and F. W. Morse, of Montpelier, was elected Secretary and Treasurer in place of W. A. Stowell.

St. Louis, Grand Tower & Southern.—The incorporators of this Illinois company are: Thomas N. Chase, of Waterloo, Ill.; C. C. Chase, of Creal Springs, Ill.; L. D. Cantrall and A. B. Starr, of Springfield, Ill.

St. Louis, Vandalia & Terre Haute.—S. B. Liggett has been elected Secretary of this company and C. D. Hoiles Assistant Secretary.

Shawnee & Muskingum.—This new company in Ohio was incorporated by E. C. Winstanley and others.

Toledo, Ann Arbor & North Michigan.—G. H. Betts has been appointed Car Accountant, vice D. Brock, resigned.

Toledo, Peoria & Western.—The incorporators and the first board of directors are: William Hill, of Warsaw, Ill.; Edward F. Leonard and John W. Bunn, of Springfield, Ill.; John S. Lee, Edwin N. Armstrong, Herman D. Gould, Enos D. Unser, and Beriah Warner, of Peoria, Ill., and George W. Smith, of Chicago.

Tuscaloosa Northern.—The officers are: H. H. Peck, of Cincinnati, President; W. C. Jemison, Vice-President; Geo. A. Seary, Treasurer; S. A. Wood, Secretary.

Union Pacific.—At the meeting in Boston on March 30, the regular ticket of directors was elected without opposition. It is as follows: Charles Francis Adams, Frederick L. Ames, Ensha Atkins, Ezra H. Baker, F. Gordon Dexter, Mahlon D. Spaulding, of Boston; Henry H. Cook, Sidney Dillon, David Dows, Andrew H. Green, Colgate Hoyt, S. R. Callaway, Grenville M. Dodge, James A. Rumrill and John Sharp. There is but one change from the membership of the old board, Mahlon D. Spaulding being substituted for John P. Spaulding.

At a meeting of the directors President Adams and the former officers were re-elected.

OLD AND NEW ROADS.

Alabama Midland.—This company, which was reported organized in our issue of March 18, will build a road from Chattahoochee River Junction, Fla., to Montgomery, Ala., about 150 miles. It will then be extended to the Kansas City, Fort Scott & Gulf Railroad at some point near Birmingham, Ala. It is to be built by the Alabama Terminal & Improvement Co., of Montgomery, Ala., J. W. Woolfolk, President. The route is now being surveyed. About $500,000 has been subscribed to the enterprise thus far.

Atchison, Topeka & Santa Fe.—It has been reported that this company has bought of the St. Louis & San Francisco Co. its half interest in the Atlantic & Pacific road. The price is said to have been $6,000,000.

On this company's new road between Los Angeles and San Diego, Cal., there are 36 miles graded between Arlington and Oceanside, leaving 75 miles to grade before reaching the latter place. The road will open up a new and beautiful country, and will establish 8 new towns. It is said that the Riverside, Santa Ana & Los Angeles road will be connected with the main line of the Atchison, Topeka & Sante Fe by July 1.

It is reported that this company has let a contract for 12 miles of new road from Las Vegas to Hot Springs, N. M., in the direction of Santa Fe.

Birmingham, Ironville & Oxmoor.—Articles of incorporation filed in Alabama for a road to run from Birmingham to Ironville via Oxmoor, 55 miles. Capital stock, $100,000.

Boston & Albany.—The directors have accepted plans, chiefly the work of the late architect Richardson, for the contemplated new passenger station at Springfield. The plan includes a bridge over Main street, and provides for a station *east* of that thoroughfare, and, therefore, cannot be carried out until authority for the change of grade is obtained. The city government will probably at once unite with the railroad company in a petition for this. The estimated cost of the structure is $500,000, and $200,000 more will probably be required for the auxiliary improvements, including the raising of the grades of the New York, New Haven & Hartford and Connecticut River roads, to enable the trains of these roads to reach the new station. The following description is from the Springfield *Republican*:

The plan contemplates a train-house 550 feet long, or 150 feet longer than the old depot, and 130 feet wide, spanning the five tracks which will run through it, and with all the waiting and other rooms for the public on the south side. The trains will enter through magnificent arches 100 feet high, above which rises the roof into a point. At the corners of the building are heavy, low, tower-like structures, from which the arches spring. The material used will be red granite cut with a rough surface, and trimmed with brownstone. The station will be approached from Lyman street by two broad drive-ways 40 feet wide, ascending by a very easy grade, and meeting in a grand porte-cochere 100 by 40 ft. From this the entrance is direct into the main waiting-room, 70 by 100 ft. Opposite the entrance, between the train-house and the grand waiting-hall, is the ticket-office, with accommodations for the telegraph and depot-master on either side of it. Opening from the general waiting-room on the west is the room for women, containing 2,384 sq. ft. Beyond that on the same side is the general baggage-room with 1,425 sq. ft., and still further on is another spacious hall for the public, which can be used to accommodate occasional crowds. East of the central waiting-room is, first, a restaurant containing 2,500 sq. ft., then a smoking-room of 1,540 sq. ft., and finally a second baggage-room for eastern baggage and storage, with 1,400 sq. ft. Connecting these various rooms on the side of the train-house is a corridor 10 ft. wide and inclosed with glass.

Boston, Hoosac Tunnel & Western.—This company is at the head of a plan to build a new road from Bardwell's Station to North Adams, Mass., and thus reach over the mountains without the use of the tunnel. Surveys are to begin at once. The plan will necessitate the building of 40 miles of new track and widening 11 miles of old road—the Hoosac Tunnel & Readsborough.

Boston & Lowell.—This company has leased the Connecticut & Passumpsic Rivers Railroad. The road extends from White River Junction, Vt., to the Canada line, 110 miles. It also leases the Massawippi Valley Railroad from the state line to Lenoxville, Canada, 36 miles, making a total of 146 miles operated. The capital stock of the company is $2,500,000, with a bonded debt of $2,250,000. At Newport, Vt., the Passumpsic connects directly with the Canadian Pacific through the latter's control of the Southeastern.

Canada, La Crosse & Southwestern.—The survey of this road has been made. It runs from St. Joseph, Mo., to the Sault Ste. Marie, Mich., by way of Charles City, Iowa and La Crosse, Wis., an approximate distance of 870 miles.

Central of New Jersey.—The Clearfield Coal Co. has made a contract to deliver its output to the above railroad for transportation to New York. The mines are about the nearest source of bituminous coal supply that New York has. The Clearfield Coal Co. is owned by the Beach Creek, Clearfield & Southwestern Railroad Co., which will carry the coal to Williamsport, Pa., whence it will be brought by the Philadelphia & Reading road to the Jersey Central at Tamaqua.

Chattanooga Valley.—Articles of incorporation filed in Alabama. The road is to run from the eastern boundary line of Alabama through to Eufaula. Capital stock, $1,000,000.

Cherokee Construction Co.—Incorporated at Chicago, Ill., for the construction of railroads. Capital, $300,000.

Chicago, Burlington & Quincy.—It is reported that the company is preparing to build another bridge across the Mississippi at Dubuque, Ia. Surveys are being made.

Chicago, Grand Tower & Texas.—Articles of incorporation have been filed in Illinois. It is proposed to construct a road from Chicago, by way of Marion, Ill., to Cairo, and from Marion to a point opposite Grand Tower, Mo., and also from Marion to a point opposite Paducah, Ky. From Chicago to Marion is about 300 miles; from Marion to Grand Tower about 35 miles; and from Marion to Paducah is about 50 miles. Principal office of the new company is in Chicago. Capital stock, $10,000,000.

Colorado Midland.—The track on this road is now laid to Florissant, 35 miles from Colorado Springs, and the grading is finished to Buena Vista, 100 miles. Tracklaying progresses at the rate of a mile per day.

Chicago, Milwaukee & St. Paul.—A. Hyatt Smith is suing this company to recover $198,400. Mr. Smith was the principal owner in the St. Croix & Lake Superior road, which was sold to the defendant in 1857. He received $64,000 bonds at 7 per cent. interest due and payable in 1867. Suit is for the recovery of the face value of the bonds with compound interest.

Chicago & Northwestern.—The company will build to Denver, Col. A contract is let for 125 miles of road from Fremont, Neb., southward.

Chicago, St. Paul & Kansas City.—Construction work has begun on this road between Des Moines, Ia., and the Missouri state line. The contractors are to have the line ready for tracklaying by September.

Chicago, Santa Fe & California.—This company has filed a deed of trust and a mortgage for $1,000,000, covering the right of way through Missouri. The road is intended to run from Chicago to Kansas City, Mo., connecting them with the Atchison, Topeka & Santa Fe.

Cincinnati, Wabash & Michigan Southern.—Orders have been given for the immediate survey of the extension from Anderson to Rushville, Ind., 38 miles.

Colorado & Wyoming.—Incorporated in Colorado. The proposed road is from the state line in Logan County, northwest through Logan and Weld counties to the north line of the state. There are to be brauches from the main line, one to connect with the Nebraska & Colorado road, and the other going to Akron, Col., on the Burlington & Missouri River road. Capital stock, $5,000,000. Principal office, Denver, Col.

Dayton & Delphos.—This road has been sold, it is said, to the syndicate which controls the Cincinnati, Hamilton & Dayton. The price is set at $260,000, of which $160,000 was cash, the balance to be paid upon the transfer of the property.

Drum Point.—J. G. Mengines, of New York, has just received the contract for building the road from Baltimore, Md., to Drum Point, 72 miles, to complete work in 12 months.

Elko & Idaho.—Articles of incorporation filed in Nevada. The road will run from Wells, Elko County, north to the Idaho line, 100 miles. Capital stock, $1,500,000.

East Tennessee, Virginia & Georgia.—The address of Mr. Henry Fink, Vice-President, is now 10 Wall street New York.

Fitchburg.—The papers for the transfer of the Troy & Boston road to this company have been signed. The price paid is as hitherto published; the face value of the bonds, $4,000,000, and $1,000,000 of Fitchburg stock for Troy & Boston stock amounting to $5,400,000.

Florida Railway & Navigation Co.—The company is now completing an extension from Withlacoochee Station to Plant City, Fla., 40 miles. It will be opened for traffic by May 1.

Fort Worth & Denver City.—When this road is finished between Pueblo, Col., and Quanah, Tex., it will be 810 miles long. It now extends to Quanah from Fort Worth 250 miles, and from Denver to Pueblo, Col., 138 miles. It is said that the necessary funds for its completion are already subscribed. The entire system will be called the Denver, Texas & Fort Worth Railway Co.

Fort Worth & Rio Grande.—C. B. Colton, Superintendent of this company, gives the information that on March 22 the tracklaying on the road between Fort Worth, Tex., and Granbury had just begun. The calculations were that 12 miles would be laid by April 1, and the road between the two points, which are 40 miles apart, would be ready for operation on June 1.

Georgia Midland & Gulf.—Mr. P. P. Dickinson, of New York, is General Contractor for this road, which is to run from Columbus to Athens, Ga. The Georgia Midland Construction Co. is builder and operator of road till it is finished. The track is laid for 50 miles, of which 10 miles were put down in March. An iron bridge over Flint River will go in during April, and tracklaying will be continued rapidly from then on.

Grand Trunk.—In a matter of dispute between this company and the Canadian Pacific over the location of conflicting lines the legislative assembly at Toronto has prescribed a plan of action. The Ontario & Sault Ste. Marie, controlled by the Grand Trunk, has the time for its construction extended to 1893. The lines of the two companies are to be located by Walter Shanly, Civil Engineer, and these lines must avoid crossing as much as possible, and in all points where a conflict of interests results precedence is to be given the Grand Trunk's road.

Idaho, Nevada & Montana.—Articles of incorporation filed in Nevada for a road from Winnemucca, Humboldt County, north to Camp McDermott, 100 miles. Capital stock, $1,500,000. A bill has passed the Nevada Legislature to aid the building of the road.

Illinois Central.—The Iowa Falls & Sioux City will be sold to the above company upon the proposed terms, which will net the stockholders about $83 a share.

Indiana, Bloomington & Western.—This road, from Indianapolis, Ind., to Pekin, Ill., 202 miles, was sold on March 28. The sale included all rights of way, the line of road and appurtenances extending from Indianapolis eastward to Springfield, O., besides terminal facilities and franchises. The sale was in accordance with a plan of reorganization made some weeks ago. This plan means the consolidation of the above company with the Columbus, Springfield & Cincinnati, under the name of the Columbus, Indianapolis & Western. The principal offices will remain in Indianapolis. The sale was made at $3,000,000. In the purchase is included the lease of the Peoria & Pekin railroad and the fourth of its capital stock.

Kanawha & Ohio.—The United States Express Co. has leased the right to run over this road to Charleston, W. Va., supplanting the Adams.

Lake Erie & Western.—Stockholders of record will be entitled to subscribe to the issues of new stock as follows:

The holders of the preferred stock may subscribe to the amount of 37½ per cent. of their holdings in new preferred stock at 50 cents on the dollar, payable one-half in cash at the time of the subscription, and the remaining one-half on or before May 5, 1887, when the new preferred stock will be delivered.

Holders of common stock will be entitled to subscribe to the amount of 37½ per cent. of their holdings in new common stock of the company at 20 cents on the dollar, payable one-half in cash at the time of subscription, and the remaining one-half on or before May 5, 1887, when the new common stock will be ready for delivery.

These issues of stock, together with an issue of $1,620,000 of the company's first-mortgage bonds, have been made by the company in payment for the railroad and property formerly known as the Indianapolis, Peru & Chicago Railroad, 162 miles in length, of main line, from Indianapolis to Michigan City, Ind., and include about 40 miles of side track and all that company's extensive terminals in the city of Indianapolis and on Lake Michigan, as well as its equipment and other property free from car trusts or any other liens.

The road is to enter Bloomington, Ill., over the Indiana, Bloomington & Western track. An additional track will be laid.

Work has begun on the extension from Bloomington to Peoria, Ill., about 40 miles.

Lehigh Coal & Navigation.—The contractors, Messrs. Broadhead & Hickey, have put 50 men at work on the branch from Scranton to Minooka, Pa. The force will be increased to 500 when favorable weather arrives.

Little Rock & Texas.—Articles of incorporation filed in Arkansas. The proposed road will run from Hackett City, Sebastian County, on the St. Louis & San Francisco, to Little Rock, Ark., about 140 miles. Capital, $5,000,000.

Louisville, Cincinnati & Dayton.—A survey has been made from Aurora Ind., to Madison, along the banks of the Ohio River. Construction work is in progress in the vicinity of Middletown, O. W. V. McCracker, of New York, is the contractor for the entire route. The road is promised to be completed before 1888.

Louisville & Nashville.—It is stated that this company will not regard the Inter-state law, and is prepared to contest its constitutionality.

Macon & Tuscaloosa.—A surveying corps started from Macon, Miss., on March 22.

Maine Central.—A. T. Stewart, Chief Engineer of the Canadian Pacific, has completed a survey of the Boston & Quebec Air Line, to be be built from Skowhegan, Me., to the Moose River, following the Kennebec River on the east side and connecting with the Canadian Pacific at Moose River Village. The Quebec Central will build down to connect at this point, and the road, when completed, will be operated by the Maine Central, and become part of the Boston & Maine system.

Memphis, Arkansas & Texas.—Articles of incorporation filed in Arkansas. Capital stock, $2,500,000. The proposed road is from Memphis, Tenn., to Pine Bluff, Ark., via Marianna and Clarendon, about 150 miles.

Memphis & Little Rock.—Announcement is made that this road will be sold under foreclosure on April 13.

Mineral Belt.—This road, which is to extend from Flag staff, Ariz., to Globe, about 150 miles, is completed for 8 miles south from Flagstaff.

Missouri, Kansas & Nebraska.—Organized in Lawrence, Kan. The proposed road will run from Paola to Lawrence, about 35 miles, and thence northwest.

Missouri Pacific.—The new schedule of rates that will now go into effect advances rates slightly to Missouri River points, and reduces them to Sedalia and intermediate points. Little Rock and Helena rates have been considerably advanced by the St. Louis, Iron Mountain & Southern, in order to protect the local. The advance to Helena is such that the river will now get nearly all the business. At points on the main line in Arkansas, this side of Little Rock, the rate has been reduced. Houston and Galveston rates have been reduced, and in the long haul carload lots will be taken to San Antonio and Galveston as cheap as to Texarkana and Dallas, which are several hundred miles nearer St. Louis. Wherever it was necessary to protect the local traffic the through rate has been advanced. The Texas & St. Louis Road adopted the same policy.

The city of Nevada, Mo., is now the terminus of five divisions of this road, as follows: Kansas City to Nevada, 103 miles of Lexington & Southern; Joplin to Nevada, 70 miles of Lexington & Southern; Sedalia to Nevada, 90 miles of the Missouri, Kansas & Texas; Parsons to Nevada, 70 miles of the Missouri, Kansas & Texas, and Chetopa to Nevada, 70 miles of Nevada & Minden road. There will be 17 regular trains daily in and out of Nevada over the Nevada & Minden, which now becomes the main line of the system.

Moorhead, Leech Lake, Duluth & Northern.—Incorporated in Minnesota. Proposed road is from Moorhead, Clay County, Minn., to Duluth, Minn., via Leech Lake, about 220 miles, with a branch to the Canada boundary line.

New Roads.—A survey is to be made for a new road between Rockland and Camden, Me., 8 miles.

A new road is to be surveyed now between Decatur, Ala., and Columbus, Miss., and to Aberdeen, Miss., 130 miles.

The International Colonization Co., of California, intends to build a road from San Diego, Cal., to Ensenada, thence to San Quentin Bay on the Pacific Coast, thence across the peninsula to Angel Bay on the Gulf Coast, where connection will be made with the Gulf Steamers.

A company is organizing for a road from Painesville, O., to Fairport, 3 miles, to make connection with the Lake Shore & Michigan Southern or the New York, Chicago & St. Louis.

A road is to be built by Louis Huller & Co., contractors, City of Mexico, from San Benito, Mex., on the coast, to Tapo Chula, 20 miles inland. When the road is finished, and a pier built at San Benito, a line of steamers will be put on between there and San Diego, Cal.

Newport, Jonesborough & St. Louis.—Articles of incorporation have been filed in Arkansas. The road is to be built from Jonesborough, Craighead County, Ark., to Newport in Jackson County, 40 miles. Capital stock, $300,000. Principal offices at Newport.

Nickel Plate Line.—From April 1 this line will be operated to and from seaboard and intermediate points east of Buffalo, N. Y., over the West Shore; the Boston, Hoosac Tunnel & Western; the Boston & Lowell; Fitchburg; Boston & Maine, and their connections.

New York & New England.—Complaints in the suit of R. A. Roberts, W. A. Jones, E. B. McCoy and James Adair against above company, the Boston, Hartford & Erie, W. T. Hart and C. P. Clark was filed this week. Suit refers to that part of the road between Fishkill, N. Y., and the Connecticut boundary. The complaint alleges that on Aug. 15, 1871, the Receivers of the Boston, Hartford & Erie were discharged from their trust upon application, and the whole property placed in the hands of Hart and Clark without notice to or consent from the bond or stockholders; and that, by their mismanagement of the road, these trustees brought about a default in the payment of interest on the mortgage bonds, so that the possession of the road should pass into their own hands and those of their confederates, and took possession accordingly; and that, subsequently, they and others concerned in the alleged conspiracy organized themselves into the New York & New England Railroad Company, which pretended corporation has and never has had any legal existence; and that it is claimed that there are $2,500,000 worth of mortgage bonds which have never been accounted for by the trustees; also that John S. Eldridge placed 4,819 of the mortgage bonds with a clerk of his named Eayrs, alleging that they had been pledged for 50 per cent. of their value, and that, in fact, Eldridge appropriated the same to his own use, together with 68,594 shares of the capital stock, which it was alleged were pledged in the same way.

It is alleged further that the state of Massachusetts accepted as part security for the loan of $3,000,000 of scrip, a large amount of the road's bonds which were already appropriated to the payment of underlying liens on the road, diverting such bonds from their proper purpose; and that the defendants Clark and Hart were parties to this. It is alleged that they gave no sufficient notice of meetings to the stockholders of the road and that they never rendered any account of their trusteeship.

On these grounds they claim that the foreclosure of the mortgage and the formation of the New York & New England Company is null and void. They ask the Court to declare the property of the Boston, Hartford & Erie road in New York state redeemable by the stockholders of the same, fixing the necessary amount of money payable. They also ask that Hart and Clark shall be called to account for their management of the road as trustees, and for all moneys received by them and shall be directed to make restitution; that the New York & New England Company shall be required to render an account of the profits of the road; and that, pending litigation, a receiver shall be appointed of all the property of the road lying within New York state.

New York, Rutland & Montreal.—In the case of the Central National Bank, of Boston, against above company, the Court has decided that the certificates issued by Receiver Van Valkenburg, to the amount of $50,000, are a first lien upon the property of the railroad company in the hands of the purchasers. A decree was ordered for the sale of the road to pay the certificates.

Niagara Whirlpool.—A decision has been given which practically prevents this road from reaching the whirlpool rapids, for which object it was organized. The decision was in regard to land owned by a college, which, the Court held, could not be appropriated by the railroad company, as they were lands held for public use.

Norfolk & Western.—The surveys made in the interest of this company for an independent connection with the Louisville & Nashville have been suspended, because favorable traffic arrangements have been concluded with the East Tennessee, Virginia & Georgia.

Ohio & Northwestern.—It has been determined to make this road standard gauge. Judge Hawes, as one of the trustees of the bondholders, has bought the Hillsborough branch road, with a view to extending it northward to Sabina, O., thus giving a connection between Columbus, O., and Maysville, Ky., and connecting at the latter point with the Kentucky Central.

Omaha & Gulf.—A charter has been obtained by this company for a road running through the counties of Washington, Republic, Cloud, Clay, Ottawa, Dickson and Saline, in Kansas.

Pennsylvania.—Nearly 100 men were thrown out of employment in the transfer station of this company at Pittsburgh, Pa., on March 31. There is no longer any use for the station under the regulations of the inter-state law.

The company owns a tract of land on the harbor at Fairport, O., and will build a line of road from Austinburgh, O., on its Ashtabula branch, to Fairport, in 1888.

The company has completed all arrangements for carrying out the provisions of the Inter-state law to the letter, and all the changes in its traffic will be put into effect on April 1.

Pennsylvania Company.—This company (operating lines west of Pittsburgh) issued its official circular on March 30 for its passenger department in conformity with the provisions of the Inter-state Commerce bill. The agents are instructed to restore passenger rates to the full regular tariff, and to be sure to sell no tickets for less than the specified rates. All sub-agents are to be discharged at once. Special rates for all classes of persons are abolished. Mileage tickets of every kind, except "advertising" are withdrawn. Contracts made with local newspapers for the year 1887, to pay for advertising and transportation, however, will be carried out. Local tickets to ministers will be continued at two cents per mile, as will also round trip tickets for thirty days. The circular goes into effect April 1.

Philadelphia & Reading.—Counsel appeared this week before Masters Dallas and Pollock to fix the priorities of lien of the several mortgages as provided for by a recent order of the Court under the Robinson foreclosure decree. Francis Gowen, representing the railroad company, offered certified copies of the appeal of Edwin Parsons from the decree of foreclosure made by the Circuit Court. By the terms of this appeal, it acts as as a supercedeas, and Mr. Gowen urged that proceedings should, therefore, be stayed by the masters, and the officers of the company thus saved the enormous labor of preparing the statement called for by counsel. The masters preferred that the Court should consider this question, and did not attempt to decide it. They say they will continue to act under the directions contained in the decree of March 7, 1877, until the Court shall otherwise order.

Pittsburgh & Western.—The right to deposit securities under the plan of reorganization will expire on April 9.

In our issue of last week the plan of reorganization of above company was printed by mistake under the caption, Pittsburgh & Lake Erie.

In regard to the statement in the daily press, about a week ago, of this road's anticipated connection to Lake Erie, at Fairport, O., it can be said that the connection referred to was made last October. The links are the Pittsburgh & Western, from Pittsburgh to New Castle, Pa.; the Pittsburgh, Cleveland & Toledo to Niles, O., and the Pittsburgh, Painesville & Fairport to Fairport harbor. The last two roads are leased to the Pittsburgh & Western. The harbor at Fairport offers exceptional facilities for traffic. Extensive docks have been built there, and Brown hoists have been placed on them to handle a large amount of iron ore and coal. Other docks are now under way.

Salina, Pacific & Lincoln.—Charter filed in Kansas. The proposed road is from Salina to Lincoln, Kan., about 35 miles, and from there west to the state line. Capital, $2,000,000.

St. Louis, Grand Tower & Southern.—Articles of incorporation have been filed in Illinois. The proposed road will be from East St. Louis, Ill., to a point on the Mississippi River in Jackson County, Ill., passing through the counties of St. Clair, Monroe, Randolph and Jackson. Principal office, East St. Louis. Capital stock, $2,000,000.

St. Louis, Kansas City & Colorado.—The survey is completed from Sedalia, Mo., to Lexington, Mo. The corps now works toward Sibley.

St. Paul, Minneapolis & Manitoba.—The name of the firm which is to build the 700 miles of road in Montana and Dakota is Shepard, Winston & Co., of St. Paul, Minn., and not D. C. Shepard & Co., as stated heretofore in these columns.

Santa Rosa & Benicia Central.—Most of the subscribers to the fund of $80,000 made payable on condition of the building of the road from Santa Rosa, Cal., to Benicia, have signed an agreement to turn over that sum to any company agreeing to build a standard gauge road to any eastern connection. The agreement further provides that if the present company will make a valid contract with responsible parties to build the road at once they should receive 10 per cent. additional.

Santo Domingo Central.—This company was organized in New York State in 1883. For some time negotiations have been carried on between it and the Government of Santo Domingo in regard to the road on that island. The company sought certain concessions from the Santo Domingo authorities, which have at last been granted. They embody a gift of each alternate section of land four miles square along the line of the proposed road (about 500,000 acres in all), besides several other valuable privileges, such as the exemption of the company from the payment of import and export duties, or, in fact, taxes of any kind for at least twenty years.

The road as proposed will extend from Barahona on the south side of the island to the port of Manzanilla on the north coast, a distance of about 150 miles, which, with the proposed branches from San Juan east through the valley of St. Thomas and west to the Haytian border, will make the total length of the line between 200 and 300 miles. The parts of the island through which the road will run abound, it is said, in forests of mahogany, satinwood and rosewood, and there are clearings where tobacco, sugar cane, coffee, bananas, cocoanuts and other tropical fruits grow in abundance. It will also run near the celebrated salt mountain property of Neyba where salt has been mined by the natives for centuries. All the plans for the undertaking are nearly completed, the necessary funds have been subscribed and work will be started at once.

Gen. Horatio King, of New York, is the President of the company that is to do the building.

Santo Domingo lies southeast of Cuba, from which it is separated by a channel about 40 miles in width and westwardly from Porto Rico about 30 miles. It is about 1,500 miles directly south from this city. The island extends in its greatest length, from east to west, about 400 miles, and from north to south its greatest breadth is 150 miles, giving a superficial area of 30,000 square miles and a coast line of about 1,200 miles.

Seattle, Lake Shore & Eastern.—The first ground on this new line in Washington Ter. was broken on March 21. Work will now continue constantly.

Shawnee & Muskingum.—Articles of incorporation filed in Ohio. Capital stock, $500,000.

Sheffield & Seaboard.—The engineers are about to go into the field to locate this line from Sheffield, Ala., to Aberdeen, Miss., about 90 miles. The contractors will follow soon. Belton Mickel is the engineer in charge.

Shell Beach.—This road is being extended from New Orleans, La., to Point-a-la-Hache, 30 miles.

Staten Island Rapid Transit.—A complaint has been filed in a suit brought against the above company to restrain it from erecting the proposed bridge over the Arthur Kill, so as to connect with the Baltimore & Ohio road.

Tehuantepec Ship Railway.—Colonel James Andrews, of Allegheny, Pa., will be in charge of the construction of the late Captain Eads' ship railway across the Isthmus. The work will be continued and carried to completion.

Texas Air Line.—This company, the organization of which was recently announced in these columns, has obtained a charter at Galveston, Tex., for a proposed road to run from Galveston due northward to the Red River, 355 miles. The line will be located during this April. Capital stock is $5,000,000, about $1,000,000 of which is now subscribed. The line will run parallel to the Texas Central and International & Great Northern roads, and will go through the middle of the cotton belt.

Toledo, Peoria & Western.—In 1885 this road was transferred to the trustees of its first mortgage. Articles of incorporation in the above name were filed this week in Illinois. The road is from the Indiana state line to Warsaw, Ill., 220 miles, with a branch of 10 miles.

Troy & Boston.—The stockholders will vote April 28 on the proposed consolidation with the Fitchburg, on the following terms:

The Fitchburg company agrees to pay to the Troy & Boston, to wipe out its bonded and floating indebtedness, the sum of $3,000,000, payable in the bonds of the company with interest at 4 per cent., and having 20 years to run, or to pay cash at par, and interest to the holders of the bonds as they may elect.

This liquidates the entire indebtedness of the road. For the $1,600,000 Troy & Boston stock the Fitchburg pays in the consolidated stock the sum of $1,000,000. The holders of this stock for the first four years are to accept five-eighths of the regular dividend declared by the company; for the next four years, 5 per cent. on the stock, after which the full dividend rates will be paid.

Tuscaloosa Northern.—Organized at Tuskaloosa, Ala. Work on the construction will begin at once. The road will connect with the Georgia Pacific road in Walker County.

Union Pacific.—At the annual meeting in Boston on March 30 the following resolutions were adopted:

Whereas, This company, as shown by the report of its directors for the year 1886, was, at the close of the year, indebted to the United States on account of subsidy bonds and the interest accumulated thereon in the sum of $49,210,265; and,

Whereas, This sum, less the amount which may be retained by the government for transportation and the amounts which may be hereafter paid to meet sinking fund requirements, will be due in 1896, 1897, 1898 and 1899; and,

Whereas, The aggregate sum which will be due and payable as aforesaid, cannot now be accurately settled, but so far as can be seen, will be surely so large that it will be beyond the power of the company to pay it off from its actual or prospective resources. Therefore be it

Resolved, That the president and directors are hereby instructed to formulate and submit to the government of the United States a plan for settling the subsidy and funding the same for such periods, at such reasonable rates of interest and under such terms as to make additional security for a gradual repayment of the principal as will in their judgment be wise and just to both the government and company.

Resolved, Further, that the president and directors be and they are hereby authorized to proceed and take all proper and necessary measures to secure an early acceptance by Congress of such plan for settling and funding the company's subsidy debts, and also for securing the liberation of the company and its business as far as possible from the control of the United States and its officers, and from all interference growing out of its present relations with the government.

The company is reported to be about to build from Laramie, Wyo., south to the Colorado state line, and to a connection with the Colorado Western road. The line will then be continued to Salt Lake City, Utah. The two corporations will have the title of Union Pacific & Colorado Western Railway.

York & Peachbottom.—The contract for laying the additional track on this road is let to Holbrook & Bro., of Baltimore.

Wabash, St. Louis & Pacific.—The Central Trust Co. of New York filed a final order against this company on March 30. It orders that the Purchasing Committee shall file a bond that it will place a further sum of $750,000 to the order of the Receivers, and that the Purchasing Committee shall take possession, on April 1, of the roads purchased. The Committee filed the bond as required.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

	1887.	1886.	Inc. or Dec.	P. c
Month of February:				
C. R. R. & Bank Co. of Ga.	$564,399	$479,920	I. $84,479	17.6
N. Y., L. E. & W.	1,457,958	1,247,475	I. 210,483	16.8
N. Y., P. & Ohio.	445,918	447,075	D. 1,157	.5
N. Y., Sus. & W.	98,341	74,382	I. 23,959	32.2
Northern Central.	488,990	420,961	I. 58,039	13.4
Phila. & Erie.	257,500	233,026	I. 24,474	10.5
Pennsylvania.	3,988,788	3,549,475	I. 439,313	12.3
Phila. & Reading.	1,518,021	1,255,389	I. 262,632	20.9
Phil. Coal & I.	1,118,021	726,776	I. 391,245	53.8
West Jersey.	77,589	64,046	I. 13 543	21.1
Total	$10,015,515	$8,508,505	I. $1,507,010	17.7
Month of January:				
C. R. R. & Bank Co. of Ga.	$530,730	$523,066	I. $7,664	1.4
Net earnings.	150 662	156,047	D. 5 385	3.4
Oregon Imp. Co.	263,351	193,022	I. 70,329	36.4
Net earnings	25,171	5,675	I. 19,496	342.0
Two months to Feb. 28:				
C. R. R. & Bank Co. of Ga.	$1,003,129	$1,002,986	I. $92.143	9.1
Net earnings.	376,971	328,870	I. 48,101	14.6
Northern Cen.	1,003,937	831,084	I. 172,853	20.7
Net earnings.	426,391	317,567	I. 108,824	34.2
St. L., A. & T. H.	210,442	187.731	I. 22,711	12.0
Branches.	140,854	119,368	I. 21,486	17.9
West Jersey.	154,397	132,520	I. 21,877	16.5
Net earnings.	19,844	35,231	D. 14,387	40.8
Total (gross).	$2,604,759	$2,373,689	I. $331,070	13.9
Total (net).	823,206	681,698	I. 142,538	20.9
*Three months to †March 31 *Feb. 28:*				
†N. Y. Central.	$8,069,000	$7,342,201	I. 726,799	9.8
Net earnings.	2,582,000	2,585,840	D. 3,840	.1
*Oreg. Imp. Co.	5.7,820	404,116	I. 123,704	30.8
Net earnings.	69,664	35,147	I. 34,517	98.3
Six months to Feb. 28:	1886-87.	1885-86.		
C R. R. & Bank Co. of Ga.	$3,750,555	$3,551,105	I. $199,450	5.6
Net earnings.	1,652,856	1,599,011	I. 53,845	3.3
Eight months to Feb. 28:				
Nash., C. & St. L.	$1,811,523	$1,477,480	I. $334,043	22.6
Net earnings.	772,616	595,120	I. 176,896	29.7
Year to Dec. 31:	1886.	1885.		
Chi., Mil. & St. P.	$24,718,405	$24,413,273	I. $305,132	1.2
Net earnings.	10,302,795	10,006,741	I. 296,054	2.9
Cleve., Ak. & Col.	542,915	493,890	I. 49,025	9.9
Net earnings.	130,532	88,001	I. 42,531	48.1
Flint & Pere Mar.	2,160,772	1,946,790	I. 213,982	10.9
Net earnings.	649,670	598,950	I. 50,720	8.4
K. C., Ft. S. & G.	2,539,338	2,546,526	D. 7,188	.2
Net earnings.	1,063,811	989,435	I. 74,376	7.6
Mil., L. S. & W.	2,353,982	1,374,806	I. 979,176	70.3
Net earnings.	1,031 380	430,417	I. 600,963	139.6
T., A. A. & N. M.	380,251	301,226	I. 79,025	26.2
Net earnings.	158,157	120.721	I. 37,436	31.9
Union Pacific.	26,603,796	25,674,674	I. 929,122	3.6
Net earnings.	8,995,178	9,687,441	D. 692,263	7.1
Total (gross).	$59,299,459	$56,751.185	I. $2,548,274	4.4
Total (net).	22,331,523	21,921,706	I. 409,817	1.8

Early reports of monthly earnings are usually estimated in part, and are subject to correction by later statements.

Fast-bound Shipments.

The shipments of east-bound freight from Chicago by all the lines, for the week ending Saturday, March 26, amounted to 74,486 tons, against 61,917 tons during the preceding week, an increase of 12,569 tons. The percentages are as follows: Wabash, St. Louis & Pacific, 10.9; Cincinnati, Indianapolis, St. Louis & Chicago, 2.7; Michigan Central, 4.4; Lake Shore & Michigan Southern, 11.2; Pittsburgh, Fort Wayne & Chicago, 17.3; Chicago, St. Louis & Pittsburgh, 11.2; Baltimore & Ohio, 10.6; Chicago & Grand Trunk, 11.7; New York, Chicago & St. Louis, 6.3; Chicago & Atlantic, 15.5.

Cotton.

Cotton movement for the week ending March 25 is reported as below, in bales:

	1887.	1886.	Inc. or Dec.	P. c.
Interior markets:				
Receipts.	29,810	27,368	I. 2,442	8.9
Shipments.	56,878	61,698	D. 4,820	7.8
Stock.	173,846	358,392	D. 184,546	51.4
Seaports:				
Receipts.	46,298	64,328	D. 18,030	28.0
Exports.	109,885	61,739	I. 48.146	77.9
Stock.	578,302	888,475	D. 310,173	34.9

The total movement from plantations for the crop year ending March 25 was 6,004,891 bales, against 5,956,178 last year, 5,373,918 in 1884–85, and 5,325,720 in 1883–84.

Coal.

Coal tonnages for the week ending March 26 are reported as follows:

	1887.	1886.	Inc. or Dec.	P.c.
Anthracite.	676,132	644,813	I. 31,319	4.8
Bituminous.	308,328	120,563	I. 187,766	155.7
Coke (March 19).	84,138	74,195	I. 9,943	13.4

Cumberland coal shipments for the week ending March 26 were 66,279 tons, and for the year to that date, 685,350 tons, an increase of 315,717 tons, as compared with the corresponding period last year.

The coal tonnage of the Pennsylvania road for the week ending March 19 is as follows:

	Coal.	Coke.	Total.	1886.
Line of road.	179.994	82,140	262.134	173,512
From other lines.	89,970	1,998	91,968	87,104
Total.	269.964	84,138	354,092	260,616
Year to March 19.	2,782,653	961,014	3,743,667	3,115,572

Increase for the week, 93,476 tons, or 35.8 per cent.; increase for the year, 628,095 tons, or 20.1 per cent.

Anthracite Coal Tonnage.

Statement of anthracite coal tonnage for February, issued by John H. Jones, the Official Accountant, was as follows, the statement including the entire production of anthracite coal, excepting that consumed by employés and for steam and heating purposes about the mines:

	1887.	1886.	Inc. or Dec.	P.c.
Phila. & Reading, including Central of N. J.	854 669	755,726	I. 98,943	13.0
Lehigh Valley.	480,615	480,736	D. 121	....
Del., Lack. & West.	482,483	418.299	I. 64,184	15.3
Del. & Hud. Canal Co.	344,361	319,053	I. 25,308	7.9
Pennsylvania Railroad.	225,106	267.076	D. 41,970	23.2
Pennsylvania Coal Co.	97,604	77.348	I. 20,256	26.2
N. Y., L. E. & W.	66,165	66,790	D. 625	.9
Total	2,551,003	2,385,028	I. 165,975	6.9

New Jersey Central tonnage for February, included in that of Philadelphia & Reading, 352,625 tons.

The stock of coal on hand at tidewater shipping points, Feb. 28, was 470,609 tons; on Jan. 31, 475,448 tons; decrease, 4,839 tons.

Exports and Imports.

The report of the Bureau of Statistics of the United States exports and imports for February and for eight months gives the following figures:

	1885.	1886.	1887.
MERCHANDISE.			
Month of February:			
Exports.	$53,940,422	$51,005,234	$54,762,348
Imports.	42,027,633	56,686,659	58,976,705
Excess of exports.	$11,912,789	.....	.....
Excess of imports.	.....	$4,781,425	$4,214,357
SPECIE AND BULLION.			
Exports.	$4,143,310	$7,055,805	$4,028,544
Imports.	2,892,044	2,133,291	1,476,121
Excess of exports.	$1,251,266	$5,522,514	$2,552,42
NET BALANCES.			
Excess of exports.	$13,164,055	$741,089	.....
Excess of imports.	.....	.....	$1,661,934
MERCHANDISE.			
July 1 to Feb. 25:	1884–85.	1885–86.	1886–87.
Exports.	$540,326,919	$461,807,105	$512,089,834
Imports.	380,753,984	410,947,783	445,769,181
Excess of exports.	$159,572,935	$50,859,322	$66,320,653
SPECIE AND BULLION.			
Exports.	$26,071,801	$33,804,248	$23.168,701
Imports.	34,592,708	31,570,250	52,851,081
Excess of imports.	$8,520 817	.....	$29,682,380
Excess of exports.	.....	$2,233,998	.....
NET BALANCES.			
Excess of exports.	$151,052,118	$53,183,320	$36,638,273

The amount of imported merchandise remaining in bonded warehouses at the end of February was $30,983,024 (an increase for the month of $200,000), against $26,924,977 at the end of February, 1886, and $28,058,449 at the end of February, 1885.

The immigration into the United States in last February was 14,317 persons, against 9,263 in February, 1886, and 9,388 in February, 1885. The total immigration for eight months ended Feb. 28, 1887, was 221,409 persons, against 156,409 for eight months ended Feb. 28, 1886, and 177,216 for the eight months ended Feb. 28, 1885.

Dry Goods Merchants and the New Law.

The members of the dry goods dealers' committee met this week and decided to send circulars to the trade throughout the country setting forth the position taken by the dry goods merchants in their protest against the freight classification. "The remaining remedies," says the circular, "are a final appeal to the railroad managers; if again refused a petition to the Inter-state Commerce Commissioners at Washington, and, if necessary, a resort to the Supreme Court of the United States." Dealers and manufacturers are asked to give their opinion as to what would be a full and complete list of all articles made of cotton which should be included in the term "cotton piece goods" and be carried by the transportation companies at rates lower than first class.

Trunk Line Presidents Meet.

At a meeting in New York this week there were present: President Roberts, of the Pennsylvania; President Depew, of the New York Central & Hudson River; President Garrett, of the Baltimore & Ohio; President King, of the New York, Lake Erie & Western, and others. There was a long discussion over the Grand Trunk's demand for differentials in its tariffs in view of its longer and less direct line to Chicago. The matter was not settled.

Fixing Coal Rates.

The Pennsylvania Railroad Co. has fixed the rate of tolls on bituminous coal to Philadelphia at $2.10 per ton. The Bituminous Association will fix the price of bituminous coal at the mines at $1.15 per gross ton. The anthracite companies have agreed upon a toll to Philadelphia of $1.50 per ton and to Port Richmond for shipment to outside points of $1.55 per ton, which is to include shipping expenses. These tolls are regarded as satisfactory.

Central Traffic Association.

This Association has formulated its new plan of organization. The object is to prevent unreasonable preferences between localities or persons for like service, and to avoid loss by unjust discriminations. The members of the Association agree to furnish the Chairman with copies of all their state and inter-state classifications and tariffs of rates and fares, and to pledge themselves to observe all the classifications.

If any member has occasion to complain to the Inter-state Commission of other railways he shall present the complaint to the Chairman for consideration and action by the Association, and any presentation thereof to the Inter-state Commission may be made by the Association if so requested by the complainant. Should the Inter-state Commission prefer charges against any member of the Association through the office of the Chairman it shall be his duty to promptly investigate them. The sum of $10,000 is to be deposited monthly to secure the payment of current expenses, to be assessed in the proportion, as nearly as can be ascertained, of the gross earnings derived by each railway in the Association.

At a meeting held in Chicago last week the Chicago & Grand Trunk Railroad Company formally withdrew from the Central Traffic Association, refusing to allow the new schedule of rates to be applied to the traffic over its northern route by the way of Montreal to New England points.

California Wool Business in Boston.

It is said that the change in freight rates made necessary by the Inter-state Commerce law will, for a time, at least, interrupt the California wool business in Boston. The highest freight rate paid within the last 10 years was $2.75 per 100 pounds. From that point rates fell until this year, when the price has been 62½ cents. Dispatches from California state that agents of railroads have announced that after April 5 the rate on wool will be $5.40. This will, of course, make it practically impossible for dealers to handle the wool in Boston.

Protesting Against the Rates.

The Boston Chamber of Commerce met in Boston this week and took the following action in regard to the Inter-state Commerce bill:

Resolved, That in the opinion of the members of the Boston Chamber of Commerce, a discrimination of five cents per hundred pounds against New England is unreasonable and oppressive, and that our community will be entitled to request that the Inter-state Commerce Commission exercise the powers vested in that body by law, and furnish us relief from the burdens which this new tariff imposes.

Resolved, That the export of Western products from this market must be abandoned by Boston merchants until such time as relief can be secured at the hands of the commission, and in the meanwhile the exports of the port of Boston must be limited to the through shipments of Western shipping houses from interior points to foreign ports on through bills of lading, this city thereby ceasing to be a market for export products.

Resolved, That a committee of five be appointed, with the instructions to petition the commission for a hearing, as soon after its organization as possible, and to then urge the necessity of such immediate action by the commission as will correct the damaging effects of the law as at present interpreted by the railroad managers and their counsel.

New Steamers on the Great Lakes.

There promises to be much competition by lake steamers with the railroads. What the navigation companies expect to do is indicated by the extraordinary activity in shipbuilding now in progress at the lake ports. The following table shows the number, capacity and cost of the vessels now under construction:

Port.	No.	Tons.	Cost.
Cleveland, O	16	36,500	$2,340,000
Buffalo, N. Y	3	7,600	735,000
Detroit, Mich	9	16,200	1,301,060
Bay City, Mich	9	18,600	1,060,000
Trenton, Mich	3	5,800	315,000
Marine City, Mich	1	2,300	120,000
St. Clair, Mich	1	2,400	140,000
Milwaukee, Wis	2	4,500	270,000
Grand Haven, Mich	1	2,500	130,000
Mt. Clemens, Mich	1	200	4,000
Baraga, Mich	1	1,600	35,000

The Pennsylvania Coal Pool Suits.

The suits instituted by Attorney-General Cassidy against the trunk line pool and the anthracite combination were called for argument in the Dauphin County, Pa., Court last week. In the case against the trunk line pool there were submitted on behalf of the defendants affidavits of George B. Roberts, Chauncey M. Depew, John King, Sr., Samuel Sloan and others, saying that the contract was not intended to work against the public interest, but by preventing secret rates and unjust discriminations, and by obtaining steady and reasonable rates for through traffic, it had enabled the companies to reduce the local rates, and had in many ways operated to the benefit of the general public, but that, in view of the Inter-state Commerce act, the companies had withdrawn from the contract, which would cease to operate from and after April 1, next.

Attorney-General Kirkpatrick said that, in view of the affidavits submitted, the hearing in the trunk line pool cases would be postponed for the present, but he insisted on proceeding with the argument in the cases of the coal companies.

Mr. Gendell contended that the agreement made to restrict the production of anthracite coal was an illegal combination. It was contrary to law for a combination to exist which had the power to control prices, whether it exercised it or not. He quoted from the evidence to show that the defendants had discriminated against Pennsylvania in the rates of transportation charges. English and American authorities were cited to show that corners in stock or in grain were contrary to law, and argued that a combination which had the power to corner so necessary an article as anthracite coal must of itself be unlawful. There should be the utmost competition, even if the weaker companies could not stand the strain.

Mr. Dickson, for the defendants, said the allegations in the commonwealth's bill were not correct; that the companies had not restricted production nor advanced prices, but on the contrary the output of 1886 had been greater than any previous year, and the prices had been lower than in any year since 1879. Such a system of regulation was necessary to secure the regular and economic production of coal and to prevent discrimination in favor of the people of New York and New England, which had always existed in times of unrestricted competition, because then the line trade was charged at the regular prices, while the surplus coal was sold at a loss in the New York harbor.

After all arguments had been submitted the Court took the papers in charge and reserved its decision.

Freight Rates to the South.

The Arbitration Committee of the Southern Railway and Steamship Association has classified the position of cotton piece goods. Heretofore it has been the practice to allow a lower classification on goods moving North than on goods going to the South, in order to encourage Southern factories. The Inter-state Commerce law forbids this, and the new classification is the same both ways. Goods shipped in less than car-load lots have been placed by the committee in the third class, in car-loads in the fourth class. Assuming Atlanta as a basis of rates, the rate would be from New York 86 cents per 100 lbs. on third class and 73 cents on fourth class.

Trouble Over Coal Rates.

A disagreement has arisen between the Pittsburgh coal operators and the railroad people. A committee was appointed last week to confer with the railroad officials. The committee reported that the roads would make the rate 95 cents per ton from Pittsburgh to the lakes. Last year the rate was 80 cents and had been raised to $1 for this year. The coal operators were unanimous in asserting that they would not accept the proffered reduction.

Wisconsin's Way.

The Wisconsin Assembly has passed a bill requiring railroad companies to furnish annual passes for that State to all members of the Legislature, elective state officers and members of the court of record.

Commissioner Fink Replies to the Merchants.

Commissioner Fink, Chairman of the joint committee of the trunk lines, has written to the Chairman of the New York Dry Goods Merchants' Committee as follows:

"The new classification was made necessary by the Inter-state Commerce law. Heretofore a number of classifications have existed, which had to be consolidated in one, and this work was performed by a committee representing not only the trunk lines, but all the Western roads engaged in this traffic. This committee was fully aware of the special arrangements which were made as a matter of experiment with the dry goods shippers of New York, but they could not see how it was possible to extend the same to all parts of the country, and this became necessary under the Inter-state Commerce law. The special agreement, which did not prove to be satisfactory to the railroads and many of the shippers, was subject to discontinuance upon notice, as clearly expressed in the agreement signed by the shippers. Only 84 firms in the city of New York have signed the agreement.

"Any change in the new classification will have to be submitted to the Classification Committee, representing all the roads carrying these goods. The trunk lines have no special control over the matter, but as Chairman of the joint committee I will submit your communication of March 24 to that committee. I cannot promise that the matter will have immediate attention, as it is proposed to give the new classification a trial before any changes can be made."

This letter has called forth the following comment from the committee:

"The 84 firms spoken of as the only ones signing in this city represent cotton goods, shipped not only from New York, but from nearly all the 1,000 mills of New England and the Middle States. But under the terms of the agreement the shippers at each point of shipment, whether city or village, had to sign separately."

Abolishment of Commissions.

There was a meeting of the Joint Committee of the trunk lines and the Central Traffic Association in New York on March 30. A passenger meeting was also held, and a circular was issued ordering the paying of commissions to any agents whatever for selling tickets to be wholly abolished. This is reported to be the unanimous action of the Trunk lines, Central Traffic Association and Southern Passenger Association, and virtually covers the whole country east of Chicago and St. Louis, and is agreed to by the Chicago & Grand Trunk, which in return is allowed a differential of $1.50 from Chicago to New York, and $3 from Chicago to Boston, via Montreal.

New York State Passenger Association.

At a meeting in New York recently, the Passenger Agents of the various New York roads agreed to adopt the Trunk Line rule which allow free carriage to each passenger for 150 pounds of luggage, and charges 12 per cent. of the rate for all excess of baggage. In conformity with the action of the Trunk Lines, it was decided to do away with all reduced fares to special classes or professions, and to abolish theatrical and commercial travelers' rates. This rule is to go into effect on April 1.

Freight Rates from Pittsburgh.

The freight rates from Pittsburgh, Pa., to Chicago have been fixed as follows: The first class will be 42½ cents per 100 pounds, a reduction of 7½ cents from the present; second class, 37½ cents, a reduction of 2½ cents; third class, 27½ cents, a reduction of 2½ cents; fourth class, 20 cents, 2½ cents reduction; fifth class, 17½ cents, and sixth class, 15 cents, no reduction in either. Iron and steel will be in fourth class for less than car-loads and in fifth class for car-loads. Glass will be in the third for less than car-loads; fourth for car-loads. The coal rates to Chicago are fixed and are the same as heretofore.

Protesting Against the New Rates.

The Arkwright Club is an association composed of nearly all the manufacturers of New England. It has passed the following resolutions:

Whereas, The trunk railroad lines propose on April 1, next, to advance the present rates of freight 50 per cent. upon a large proportion of the goods manufactured by the mills represented in this club, and to discriminate in the method of packing the goods, by charging a higher rate upon those in boxes than when in bales, whether identically alike or of less value; and

Whereas, Those fabrics are chiefly used for the clothing and household purposes of the industrial and wage-earning people of the country, upon whom the 50 per cent. increase in railroad charges will ultimately fall—the lowest cost fabrics paying relatively the highest per centum of increase, while the high cost imported silk and other expensive fabrics are not appreciably affected; therefore,

Resolved, That the Executive Committee of this club is hereby instructed to take such action, either in the courts or before the Inter-state Commissioners, and in co-operation with other persons or bodies, as in its judgment may be necessary.

ANNUAL REPORTS.

Chicago, Burlington & Quincy.

The figures below are from a statement of this company for the year ending Dec. 31, published in advance of the full report.

The earnings for the year were as follows:

	1886.	1885.	Inc. or Dec.	P. c.
Freight	$19,367,935	$19,565,853	D. $197,918	1.0
Passengers	5,633,261	5,286,408	I. 346,853	6.5
Mail, express, etc	1,727,212	1,704,164	I. 23,048	1.3
Total	$26,728,408	$26,556,425	I. $171,983	0.6
Expenses	14,491,683	14,405,767	I. 85,916	0.5
Net earnings	$12,236,725	$12,150,658	I. $86,067	0.7
Gross earn. per mile	7,140	7,520	D. 380	5.0
Net " " "	3,269	3,438	D. 169	4.9
Per cent. of exps	54.2	54.2		

Taxes are included in expenses in both years. The income statement is as follows for the two years:

	1886.	1885.	Inc. or Dec.
Net earnings, as above	$12,236,725	$12,150,658	I. 86,067
Interest, etc	615,343	592,33	I. 22,910
Total income	$12,852,067	$12,743,090	I. $108,977
Fixed charges	5,214,513	5,127,864	I. 86,649
Dividends	6,110,722	6,110,572	I. 150
Carried to renewal fund	1,000,000	1,000,000	
Total	$12,325,235	$12,238,436	I. $86,799
Surplus for the year	$526,832	$504,654	I. $22,178

The stock and debt at the close of the year were:

	Dec. 31, 1886.	Dec. 31, 1885.	Inc. or Dec.
Capital stock	$76,389,525	$76,394,525	I. $2,000
Funded debt	79,539,707	76,924,508	I. 2,615,199
Total	$155,926,232	$153,309,033	I. $2,617,199

Expenditures last year for new construction were $7,428,511; addition to equipment, $739,804.

During the year 19¼ miles of second track have been added in Illinois and 1¼ miles in Nebraska. The number of miles of second track on December 31, 1886, was, in Illinois, 203¾; in Iowa, 67½; and in Nebraska, 4¼, total, 276.

In Illinois, Iowa and Missouri during the year 128½ miles of steel rails were laid in branches and side tracks to replace iron rails; 19¼ miles of steel rails were laid in new second track and 16¾ miles in new side tracks and 12¼ miles in new main track upon branches. The total number of miles of steel rails in all tracks east of the Missouri River on Dec. 31, 1886, was 1,761. This includes the whole main line in Illinois and Iowa.

In Nebraska and Kansas during the year 127¾ miles of main track and 2 miles of side track were relaid with steel rails in place of iron rails; 318 miles of steel rails were laid in new main track upon the several branches built during the year, and 1¼ miles in new second track, making 1,350¼ miles of steel rails in all tracks west of the Missouri River on Dec. 31, 1886.

The general condition of the entire road and equipment has been fully maintained during the year.

The actual length of road in operation Dec. 31, 1886, was 4,036 miles, against 3,646 miles Dec. 31, 1885, an increase of 390 miles

The average number of miles operated by the Chicago, Burlington & Quincy Railroad Co. in 1886 was 3,743, against 3,531 the year before.

The properties controlled by this company, whose operations are not embraced in this report, show an increase in net surplus for the year of about $620,000; the surplus being about $790,000 in 1886, as against $170,000 in 1885, after paying their own operating expenses and interest on their outstanding liabilities not owned by the C., B. & Q. R. R. Co. Of this surplus the Kansas City, St. Joseph & Council Bluffs Railroad Co. earned about $450,000, and paid to this company during the year a dividend of 5 per cent. on the shares held by it, making $263,075, included in the item "Interest, etc."

Missouri Pacific.

At the close of the fiscal year ending Dec. 31, 1886, the company worked the following mileage:

	Miles.
Missouri Pacific	1,103
St. Louis, Iron Mountain & Southern	923
Missouri, Kansas & Texas	1,396
International & Great Northern	775
Galveston, Houston & Henderson	50
Central Branch, Union Pacific	388
Sedalia, Warsaw & Southern	42
Total	4,667
Average mileage operated during 1886	4,601

The earnings for the year were as follows:

	1886.	1885.	Inc. or Dec.	P.c.
Mileage operated (average)	4,601	4,559	I. 42	0.9
Earnings:				
Freight	$20,435 889	$19,226,742	I. $1,229,146	6.3
Passengers	5,943,455	5,894,681	I. 48,774	.8
Mail	721,509	710,2?6	I. 11,214	1.5
Express	573,696	645,323	D. 71,627	11.0
Miscellaneous	499,818	479,168	I. 20,650	4 3
Total	$28,194,367	$26 956,210	I. $1,238,157	4.6
Expenses	16,308,427	15,386,560	I. 921,8 7	5 9
Net earnings	$11,885,940	$11,569 650	I. 316, 90	2 7
Gross earn. p. mile	6 127	5,913	I. 214	3 6
Net " "	2,583	2,538	I. 45	1 8
Per cent. of exps	57.8	57 1	I. .7	....

The division of the working expenses for the two years was as follows:

	1886.	1885.	Inc. or Dec.
Conducting transportation	$5,807,814	$5,327,885	I. $479,929
Motive power	4,511,574	4,395,825	I. 115,749
Maintenance of way	4,456,774	4,060 586	I. 396,188
Maintenance of cars	945,566	1,064,528	D. 119,272
General expense	586,998	537,725	I. 49,272
	$16,308,426	$15 386,559	$921,866

The income account of the Missouri Pacific road for the year is as follows:

Earnings	$8,693,963
Expenses	5,238,723
Net earnings	$3,455,240
Dividends	1,311,888
Total income	$4,767,128
To interest on bonds	$1,875,479
Taxes, rentals, etc	3,185,761
	5,061,231
Deficit for the year	$294 103
Surplus earnings of previous years	4,793,?96
Total surplus Dec. 31, 1886	$4,199,193

ST. LOUIS, IRON MOUNTAIN & SOUTHERN.

Earnings	$7,311,612
Expenses	3,868,331
Net earnings	$3,443,281
Interest on bonds	$2,214,131
Taxes, bridge expenses, etc	350,144
	2,564,275
Total income	$879.006
Dividends received, etc	159,799
Surplus	$1,038,805
Surplus from previous year	2,736,283
Total surplus Dec. 31, 1886	$3,775,088

MISSOURI, KANSAS & TEXAS.

Earnings	$7,451,644
Expenses	4,228,754
Net earnings	$3,222,890
Dividends received, etc	126,452
Total	$3,349,342
Interest, rentals, etc	3,985,384
Deficit for the year	$636,042
Surplus from previous year	3,800,401
Total suplus Dec. 31, 1886	$3,164,359

INTERNATIONAL & GREAT NORTHERN.

Earnings	$2,925,866
Expenses	1,958,518
Net earnings	$967,348
Dividends received, etc	890,896
Total income	$1,858,244
Interest, etc	912,586
Surplus	$945,658
Surplus from previous year	2,612,858
Total surplus Dec. 31, 1886	$3,558,516

GALVESTON, HOUSTON & HENDERSON.

Earnings	$401.031
Expenses	395,355
Net earnings	$5,675
Rentals received	254,629
Total income	$260,304
Interest, taxes, etc	118,467
Surplus	$141,837
Surplus from previous year	46 906
Total surplus Dec. 31, 1886	$188,743

ST. LOUIS, FORT SCOTT & WICHITA.

Earnings	$783,033
Expenses	575,3?8
Net earnings	$207,694
Other income	5,191
Total	$212,885
Interest, taxes, etc	3?5,774
Deficit	$152,889
Surplus from previous year	456,772
Total surplus for Dec. 31, 1886	$3?3,883